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Ernest P. Viveiros, Sr.



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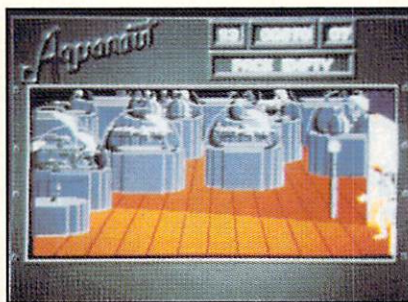
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The following **Amazing Dealers**, carry *Amazing Computing™*, your resource for information on the Amiga™, and *AC's Guide To The Commodore Amiga*, the total Amiga product guide. If you are not an Amazing Dealer, but would like to become one, call.

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EDITORIAL CONTENT

WITH ANY LUCK, YOU ARE reading this on the beach, or perhaps beside a nice pool. Possibly you are spending these moments in a backyard hammock or in a nice comfortable chair. Past experience would suggest that the one place you are probably not spending this time is beside your Amiga (unless you keep your Amiga in a cool basement like I do).

It has always been a general fact of the consumer computer business that the summer season is a very slow time. Few new products are released, few groundbreaking announcements are made. Often, there is little to do but wait for the cooler, more productive days of fall. This has always been the way that the major computer companies, and their third-party developers, have handled the dog days of summer—until now.

Apparently Commodore and its third-party developers have a different way of looking at the opportunity summer provides. While their competition is on vacation, Commodore has announced two new platforms for Amiga computing: Commodore Dynamic Total Vision (please see the July issue) and the Amiga 3000. The A3000 was announced at the end of April, but shipments are now heavy in the US, and the early word is that the A3000 is selling extremely well.

For third-party developments, please take a look at the new announcements and reports from the AmiEXPO in Chicago (see page 63 this issue). Both small and large companies announced major new products, upgrades for existing software, and special pricing on current products. All of this as the temperature outdoors rose to 90 degrees, with high humidity.

Among the more exciting announcements from the growing number of Amiga developers was a new high-density drive from Applied Engineering that permits Amiga-format storage on high-density 3-1/4 inch disks at 1.52 meg. This drive has also made disk ejection software controllable.

Black Belt Systems announced a wide variety of products for both the

consumer and the Amiga developer. Every product was announced with full ARexx support and no copy protection.

Several hardware producers are vying for the fastest SCSI hard disk controller interface. Both Interactive Video Systems and ICD displayed some amazing graphic and sound capabilities from hard disks. Each had digitized several minutes of video and displayed it directly from the hard drive with sound at thirty frames per second. Apparently IVS had first demonstrated this effect at the Basel AmiEXPO. IVS also worked with Digital Creations to demonstrate DCTV, Digital Creations' graphic display software, with a windsurfing film which must be seen to be believed.

TALKING A GOOD GAME

Oh, I see. You *are* comfortable in your beach chair, and not really getting excited. After all, what does this mean to you?

Well, fellow Amiga user, it means that the Amiga is at the center of one of the most exciting computer markets today. These new introductions and refinements provide the Amiga user and potential Amiga customers with more choice, and a better perspective of what the Amiga can do.

Yet, you are not convinced. You see, it is not enough for AC (or any publication) to continually describe products and their features in esoteric terms. It is extremely beneficial to list the features of a new product, true. But it is even better when we actually show how those features resolve a problem in industry, or lead to a new means of doing something better and more efficiently.

It is, of course, easy to blandly say that a product is good, and that it does such and such. This casual attitude often leaves the Amiga user with only a small understanding of just how powerful their Amiga can be. AC has never been comfortable with this style of hands-off journalism. Each article here is presented by people who are familiar with the Amiga,

and in most cases use the Amiga in their professions every day.

This is demonstrated perfectly with the articles by Frank McMahon in this issue. Mr. McMahon has spent the last three years utilizing the Amiga every day to produce on-air visuals. His article demonstrates the need for an Amiga in every cable station in the country. For its cost and efficiency, there is no better choice.

We believe this message so strongly that we would like to ask the following favor. If your local cable station does not use Amigas to produce their on-air visuals, send us their name and address, and we will send them a copy of this issue. It is always nice to talk and write letters about the Amiga, but it is a much more powerful message when professionals see their peers and their competitors in the industry using the Amiga in a creative and less expensive manner.

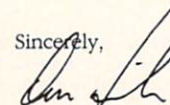
Please send your cable station's name and mailing address to:

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Fall River, MA 02722-9970

OK? Is this enough to stir the blood even slightly? The Amiga is becoming a better platform every day. It can do jobs that were never possible before, but it still needs to be noticed. If you take the time, we will send cable television professionals our collective message. Drop us a line today (or if the baseball game is really good, tomorrow).

While you are at it, let us know how *you* are using the Amiga. Who knows, what you take for granted may become our next big story. It happened to Frank McMahon.

Sincerely,


Don Hicks
Managing Editor

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Feedback

Dear AC:

I read (with great enthusiasm), your article "Handling MSDOS Files" by Jim Locker in *Amazing*, V5.4, page 52, and liked what I read. One problem, though, in trying to locate the type of 5 1/4" disk drive indicated by the author. Every dealer that I have contacted in my area draws a blank when I ask for a surplus 5 1/4" 96tpi, 80 track full height drive. The problem may be in my interpretation, is this a 720K formatted (as was mentioned in the article), and does it use DD, or HD disks or is it a commonly available 1.2MB HD 96tpi IBM drive? Another discrepancy popped-up when reviewing the body text of the article. A 7402 OR gate was specified, and on the schematic, 7432 was specified. Which one is the correct number??

Any answers, and/or clarification to my questions would help to solve a very puzzling dilemma. Many thanks in advance.

Randy Luczak
Emsworth, PA

—Mr. Locker received the products from Midwest Surplus Electronics, 501 W. Main Street, Fairborn, OH 45324, (513) 879-2250 or (800) 523-3690. He used the 720K formatted floppy. Regarding the difference between the number on the text and the schematic, 7432 is the correct OR gate.—ED

Dear AC:

I have just finished reading The Command Line column in your magazine, *Amazing Computing* and I must say that your magazine has really helped me a lot as a college freshman taking up Computer Science. I really enjoy reading the articles and the tutorials in your magazine especially "The Command Line" column. Your tutorials are most helpful and your software reviews are most of the time fair.

But I feel that what is lacking in your magazine in-depth coverage and information about areas of programming like Artificial Intelligence. As a programmer, I want to tackle other programming languages and I could use information provided by such articles and I feel that other users can too.

I hope that we will see more articles about programming, graphics tutorials (like the ones in your JAN. issue), telecommunications, and general business.

Sincerely,
Randy Alava
Capitol Site, Quezon City
Philippines

Dear AC:

Sorry to burst the bubble, but US dimes (quarters, nickels, pennies, and half dollars) no longer have any silver content, as John Iovine asserts. The US dime, which was specifically mentioned, weighs 2.27 grams, is 17.9 millimeters in diameter, with an inner core of pure copper, and an outer layer of 75 percent copper and 25 percent nickel. Barring this, congratulations on a job well done.

Sincerely,
Jeffrey Scott Mundt
Louisville, KY

—We contacted several coin dealers in the Boston and Washington DC areas. Here's what we discovered. Up until 1964, all US coins contained 90 percent silver. From 1965-1970 the only coin to contain any silver was the half dollar which was only 40 percent. From 1970 and on they no longer made any coins (i.e., dimes, quarters, nickels, pennies, and half dollars) with silver. We apologize for this error, but Mr. Iovine has stated that the dime does work!—ED

Dear AC:

I own an Amiga 500 and have some questions.

If I have an expansion box (slots) and I bought the 68030 GVP (33MHz), will it work with all my software or will I have to shut it down to work with some programs, like RPG, desktop video, and text processors. What about digitizers, genlocks, and other hardware?

I hope that you can answer my letter because in Mexico, especially in Cancun, there aren't many resources for the Amiga.

Carlos Alejandro
Cancun, Mexico

—The GVP Impact Accelerators have an excellent compatibility record. The GVP board should work with most of your software, however it does have some known compatibility problems with a few games. You can simply bypass the 68030 by pulling a jumper on the accelerator board. Also, the board's asynchronous design makes it work well with genlocks & other hardware. As always, you should contact the manufacturer for specific compatibility details.—ED

Dear AC:

Thank you for publishing my article in the May 90 issue of your magazine. I enjoy writing about electronics and having my work published always calls for a celebration.

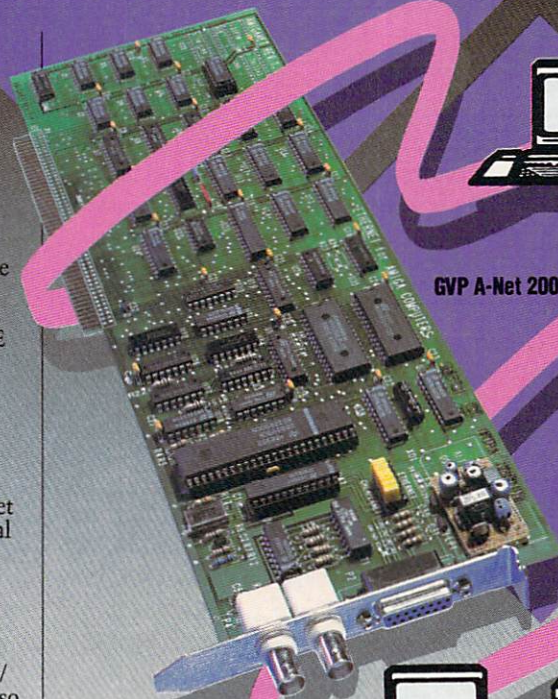
I would like to report two minor corrections. First, if you look at Figure Three, the PC Board layout is upside down, which could possibly confuse your readers when they refer to Figure 4 and 5 for component placement. Second, I have been told recently that there are several versions of the Plug 'n' Power transmitter available from Radio Shack. All of them have the same catalog number, except for

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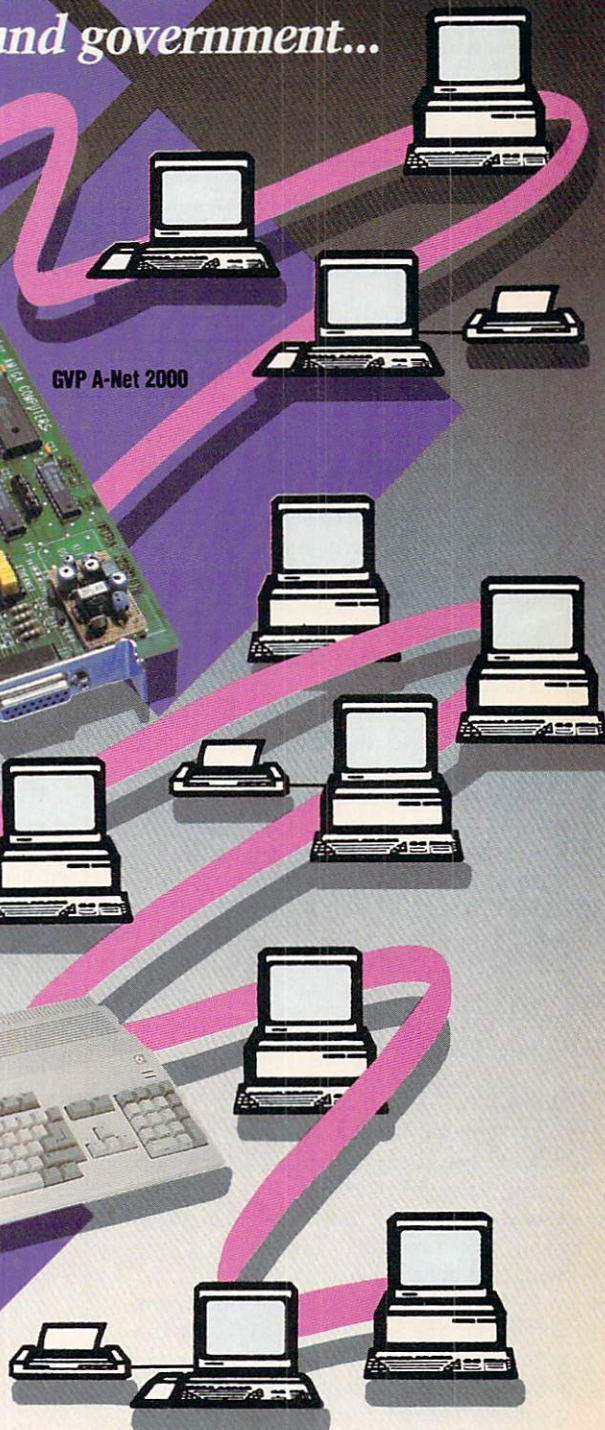
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a letter suffix. The one I used was model 61-2677A (A suffix). It is shown on page 26 of the article. The other model, available under the number 61-2677B (B suffix), is also available from Radio Shack, but it has a different key matrix and controller chip, making it incompatible with my hardware. Your readers can tell the difference between the two models by looking at the Radio Shack catalog number printed on the box or by looking at the number of keys on the unit. The "A suffix" has 10 keys (8 square and two rectangular ones; see photo on pg. 26) while the "B suffix" only has 6 rectangular keys. Also the "B suffix" controller chip has 24 pins, instead of 28. The "B suffix" is not available in Canada, making it difficult to evaluate the modifications required for compatibility. Therefore, please advise your readers to use only the 61-2677A (A suffix).

Andre Theberge
Quebec Canada

Dear AC:

"Enough is enough", I said as VideoScape 3D again refused to open up an overscanned window for my latest and greatest animation. "Either I do something about this wretched program, or I buy Sculpt-Animate 4D Professional!"

Well, my investment in Aegis Software for desktop video has passed the purchase price of my Amiga 500, so buying new animation software is out of the question. That left me one option.

Firstly, let me explain my problem. My Amiga is a PAL chipped job (not surprisingly, as I live in Australia), and ever since I bought VS-3D, I have never been able to open an overscanned window, which is needed for animations destined for videotape. Photon Paint II can, as well as PhotoLab Paint. Why not VS? Who

knows, but the problem appears to be that the extra lines that PAL gives chews up memory on my poor little 1MB of RAM. Solution? Kill the PAL software. How? Take a look at my commented Draco source code. Result? I still use VS-3D.

If you use this source, note that

you have to move a window once the program has run for the NTSC settings to take effect. You can't just do a MoveWindow() on the window that the program creates to locate the Workbench, or close and reopen the Workbench. I don't know why, it just is. This program also fixes another troublesome program, DeluxeVideo 1.0. I still have to restrict it to

chip RAM, but by deleting the PAL screen extension, I get more of the chip RAM.

If you blink with the .w file below, your executable will be a tiny 580 bytes in length.

I can't get the executable size down any further. Any hackers out there who can:

- 1) fix the program so the NTSC effect takes place at once?
- 2) rewrite the thing in Assembler?

Neil O'Rourke
Tamworth, Australia
[code follows in box below]

All letters are subject to editing. Questions or comments should be sent to:

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Attn: Feedback

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```

#include:exec/tasks.g
#include:exec/miscellaneous.g
#include:intuition/miscellaneous.g
#include:intuition/screen.g
#include:intuition/window.g
#include:graphics/gfx.g
#include:graphics/gfxbase.g

```

```

*Window_t Window;
*Screen_t wbscreen;
*GfxBase_t gfxBase;
*NewWindow_t nw;
/*****
Thanks to Aegis for the agro to write this
*****/

```

```

proc main()void:

```

```

    if OpenIntuitionLibrary() ~= nil then /* Not a pain! When WONT intuition */
    if OpenExecLibrary() ~= nil then /* and exec be open??? */

```

```

        gfxBase := OpenGraphicsLibrary(); /* Find some interesting info */

```

```

        nw := &NewWindow_t( /* Make a window, so we can locate the */
            0,0, /* WB screen and data*/
            50,50,
            FREOPEN,FREOPEN,
            0,
            ACTIVATE | SMART_REFRESH,
            nil,nil,nil,nil,nil,
            0,0,0,0,
            WBENCHSCREEN);

```

```

        Window := OpenWindow(nw); /* Open a Window */
        CloseWindow(Window); /* and get rid of it */
        wbscreen := Window.w_WScreen; /* Found It! */
        Forbid(); /* Tell exec to go away for a bit */
        wbscreen.sc_Height := 200; /* how big we want WB */
        gfxBase.gb_DisplayFlags := NTSC; /* Tell System */
        RemakeDisplay(); /* and force the issue */
        Permit(); /* Done! */
        CloseGraphicsLibrary();

```

```

        fi;
        CloseExecLibrary();
        fi;
        CloseIntuitionLibrary();
    corp;

```

Makefile for MakeNTSC using Draco compiler:

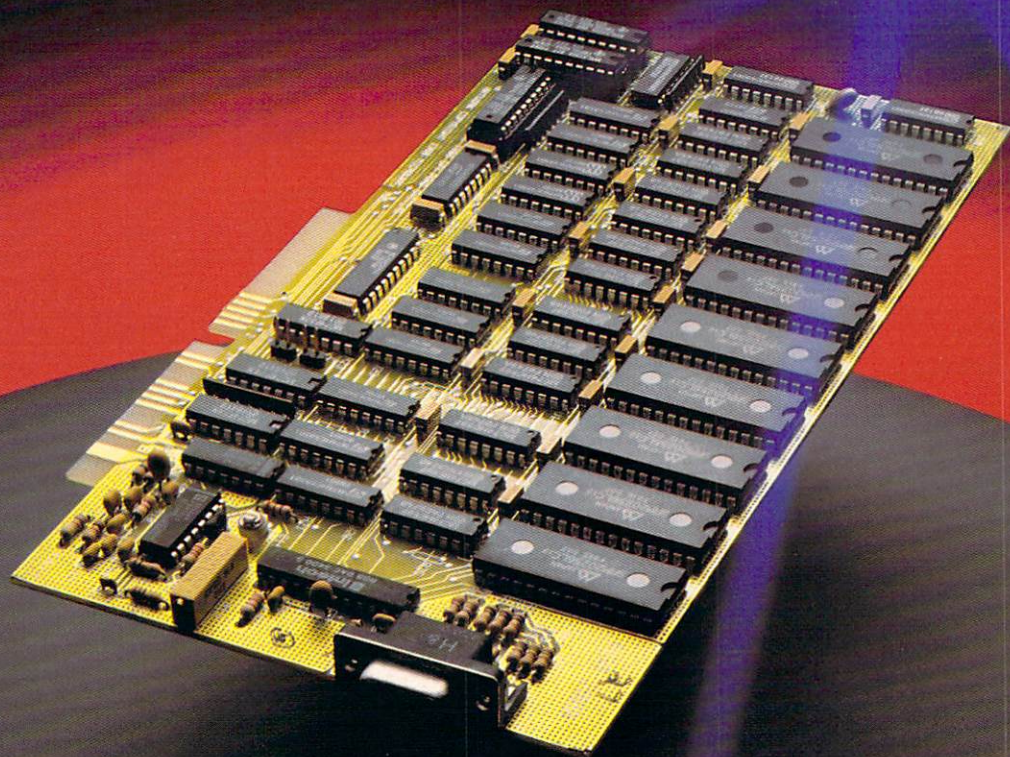
```

from dlib:drstart0.o+MakeNTSC.r
lib
dlib:intuition.lib+dlib:exec.lib+dlib:graphics.lib
to MakeNTSC
smallcode

```


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MidiQuest

Multi-Keyboard Librarian/Editor

by Hal Belden

HAVE YOU EVER WISHED FOR A VERY SPECIAL PIECE OF SOFTWARE TO COME along—and then be lucky enough to actually find it? You know, software that has all the features you have been looking for. Software that spares you the cost and aggravation of having to buy and then run four different packages to achieve your goals.

MidiQuest, from Sound Quest, is just such a package for me. On two disks, MidiQuest delivers 65 keyboard and effects librarians, 35 keyboard editors, a librarian driver creator, a voice file converter, a music database, a sequence player, and a MIDI event display. An optional keyboard voice editor template, to configure voice editors for keyboards and effects not yet addressed or still under development, is also available.

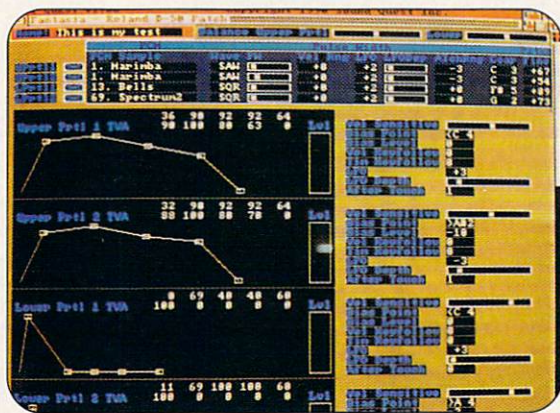
LIBRARIES

The librarian drivers, each configured to address communications between your keyboard and your Amiga, are on Disk Two. These are in a compressed format, so you have to install the ones you want to use before booting the program. An install utility is provided on the disk. Just tell it where you want the program to be (dh1:, df1:, dh1:music/MidiQuest, etc.), and which of the drivers you want installed.

Drivers are listed as sets, a set for the Korg M1, a set for the Roland GR-50, etc. Each set has specific drivers to address the specific data the keyboard can dump or load, such as a bank of voices, a single voice, a combination multi-bank or voice, or an effect setup.

When you boot the program, it automatically loads all those drivers you installed and displays a list of them in a window on screen. You are able to scroll through the list and click on a selection, then on "edit", "disk", or "dbase" gadgets to direct the data you retrieve from your keyboard. When you do click on one of these gadgets, a small window comes up with a flickering gauge indicating that it is ready to accept the data. Click on the gadget labeled "finish", and the data is sent to the indicated destination: disk, database, or directly to an edit screen. This data can be named and retrieved from disk at any time; or, it can be sent to the editor or downloaded to the keyboard at any time.

I have been told that there are more drivers in the works which will be made available to owners through a BBS. You can also create your own new drivers by using the supplied driver editor. This is a capability that will likely require some study to implement.



Editor templates range from 1/8 to 2-1/2 screens in size

The manual gives extensive coverage to it and recommends that you load in some existing drivers to study their construction. Do NOT test these with valuable data. Use only backed-up data.

VOICE EDITORS

The editor templates are also found on Disk Two. As in the case of the drivers, these have to be installed. This is done at the same time you install the drivers. Some of these can be very large files, so if you are not using a hard drive you have to be careful what you install on a disk.

Also like the drivers, the templates are set up to edit specific data types: single voices, voice banks (you can edit banks and generate random voices), drum assignments, and whatever else the specific hardware you are accessing supports. The results can be saved, dumped to the keyboard, or installed in a database.

Each template is an extensive graphic and numeric editing window comprised of information which can occupy as little as a eighth of a screen, to as much as 2-1/2 screens (in hi-res lace mode). In the latter case, you must scroll around the screen with slide gadgets (provided) to see the entire set of parameters. And yes, the envelopes are displayed graphically and can be dragged around by grabbing them and sliding the mouse. As you slide the mouse, the corresponding numeric values scroll around, indicating the current position of the envelope. You can alternately click directly on a numeric value and change it by sliding the mouse around.

There are more templates in the works as well. If you are experienced as a MIDI programmer, you may want to invest in the optional template editor (about \$100.00) to create your own templates for any MIDI-capable device. This is a graphic editor which lets you: draw boxes and define their contents with MIDI values, create envelopes graphically, and define colors for your templates.

If you are not experienced in its usage, however, this editor is definitely NOT recommended. Wait for someone else to create that template for you. Sound Quest is, in fact, actively seeking suggestions from users as to which new templates should be created.

DATABASES

Databases accept voice, bank, sequence, configuration, or just about any MIDI data,

storing it as files which can then be saved or downloaded as a group. Files can be swapped between databases by simply dragging them with the mouse. When you need to download a configuration to a group of MIDI devices, just load it from disk and send it out through MIDI. You should be able to configure an entire keyboard setup with one download command.

SEQUENCES

Standard MIDI file sequences may be loaded and played on demand from within this program. The buffer can store up to 16 different sequence files (limited by available RAM). You can adjust tempo and looping, but nothing else. This is a dedicated sequence player, only. You CAN play a sequence while editing a voice, though. The sequences themselves will have to be created on some other software.

Also available with this software is a MIDI monitor. This displays MIDI activity on a graph; or, you can toggle the display to show actual MIDI HEX data in real time. There is also a SYS-EX data window to display the HEX data from an established file.

An item I didn't find was the file converter. A file converter window does open, but, the actual conversion tools were not on my disk. Apparently these were not ready yet, but are expected soon (probably by the time you read this). These will allow you to convert voice files created by software developers other than Sound Quest for use in MidiQuest. You can even create your own conversion macros, but once again, you should know what you are doing to attempt this.

AND IN CONCLUSION...

This is one of those pieces of software that makes you wonder why it wasn't done this way before. I ran into no bugs while playing with it, and had only one, unreproducible crash. The manual is well fairly thorough and well-organized (unlike previous Sound Quest efforts). I see no reason to buy an individual voice editor/librarian anymore.

•AC•

MidiQuest
Sound Quest
1573 Eglinton Ave. W. Ste. 200
Toronto, Canada M6E 2G9
(416) 256-0466
(800) 387-8720
Price: \$250.00
Inquiry # 204

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MAPPING THE AMIGA

book review by Joe Graf

MAPPING THE AMIGA, ONE OF THE NEWEST ADDITIONS TO THE EVER-growing Amiga programmers reference library, is written by Rhett Anderson and Randy Thompson. Both Randy and Rhett are Associate Editors of *Amiga Resource* magazine. Rhett Anderson is also the creator of the Slided Hold-And-Modify video mode (SHAM for short). The two together have created a 446-page reference book for the C, Assembly, or Modula-2 programmer.

FUNCTION CALLS

The book is not like every other Amiga reference book on the market. Most of the available books group function calls into sections (e.g., AllocMem is found in a chapter on Exec), but *Mapping The Amiga* approaches things a little differently. Instead of sectioned function calls, where you have to know in which library a particular function is located, the authors chose to lump all the functions from all libraries into one chapter. This allows for alphabetical access as a whole, rather than searching through section after section trying to find the correct library.

Each function call entry has the same format throughout the chapter. The entry gives a brief description of the function, shows which library it is located in, and gives you the offset from the library's base (for Assembly). A function call entry also includes the arguments to be passed, their description, and the result of the function. The organization is logical and concise, although descriptions are, at times, a little too brief. The chapter even contains information on the clist.library, which I had not seen documented in any book until now.

STRUCTURES

The second chapter is composed of every structure found in every header file in your include directory. Every structure is

laid out alphabetically in the same manner as the library functions. Each entry contains a wealth of information on the individual structure, such as where it is found, which functions use it, its size in bytes, and how it is labeled. Probably the best feature of this section is the byte-count column. If you need to access the y-velocity of an AnimOb from Assembly, you just turn to the AnimOb structure, look down the lists of items in the structure, and you will see that YVel is 20 bytes away from the base of the structure. I have found this to be indispensable while working in Assembly. That doesn't mean that this section is only handy for Assembly language programmers. This could be valuable to someone who has forgotten a section of a structure or is just learning what each structure contains.

HARDWARE REGISTERS

The third and final chapter (five appendices follow) contains a description of every hardware address on the Amiga. This section is so thorough it even contains registers not currently being used. Each register entry contains the abbreviated name, real name, hex location, status, chip location, and the register's use. The chapter provides valuable information and explanations about the blitter registers and their use. Minterms and octant calculations are also thoroughly explained.

One of the nicest features of *Mapping* is the way each section is laid out. The Copper Registers (\$DFF080 - \$DFF08C) are first explained generally and then, in-depth, on an individual basis. This allows for a full understanding of what the Copper does and how it works before going into the register-specific information. This method, which is consistent throughout the chapter, gives the reader a solid base before discussing the harder-to-understand information, making this book irreplaceable to the beginning Assembly language programmer, who wishes to "hit the hardware".

IS THIS BOOK FOR YOU?

Whether this book is a 'must buy' for you depends on what you need. If you are a beginner and would like to learn from examples this is not the book for you. *Mapping* does not contain enough examples, and the examples that were included didn't work the first time with Aztec C, although they did eventually work without too much modification. If you are a beginner, and would like to program the hardware, have a full list of the library functions, or a complete list of structure definitions, then *Mapping* will be one of your most used. Experienced programmers will find the book a good source of reference material, with information arranged in an easy-to-locate, logical fashion. On the whole, *Mapping The Amiga* would be a great addition to any programmer's library.

•AC•

Mapping The Amiga
Computel Publications
324 W. Wendover Ave., Ste. 200
Greensboro, NC 27408
(919) 275-9809
Price: \$22.95
Inquiry #207

NEW PRODUCTS & other neat stuff

COMPILED BY ELIZABETH G. FEDORZYN
AND GREG YOUNG

ART DEPT. TO EXPAND

ASDG, Incorporated has further enhanced the capabilities of its recently released color image processing software system, *The Art Department*, with the introduction of two new file loader modules for converting TIFF and PCX images into Amiga-readable formats.

Additionally, ASDG has asked all manufacturers of computer image file formats throughout the entire personal computer industry to submit their image file specifications, along with sample images, to ASDG's sales and development office in Madison, Wisconsin. ASDG eventually plans to support nearly every image file format currently used with IBM PC-compatible, Apple Macintosh, NeXT, PIXAR and Atari ST computers.

Both of the new file loaders import images generated on PC-compatible computers; the TIFF loader also gives Amiga users access to images created on the Macintosh, NeXT and PIXAR hardware platforms. The TIFF loader also features the ability to read files stored in Group III Fax format.

The Art Department is a full-featured modular image file-loading interface and 8- and 24-bit color image processing system used by graphic and video artists who work with Amiga 3-D modelling software. Implementing the fastest image rendering and conversion technology presently available on the Amiga, it comes equipped with a DigiView 21-bit loader and a Super-IFF loader supporting any format image up to 24 bitplanes.

The introduction of the TIFF and PCX file format loaders brings to an impressive eight the number of additional optional loaders available.

TIFF module: \$39.95, PCX module: \$49.95, ASDG, Inc., 925 Stewart Street, Madison, WI 53713, (608) 273-6585. Inquiry #217

SKY'S THE LIMIT

Take to the wild blue yonder this summer with Accolade's *Strike Aces: International Bombing Competition*, a military flight simulation based on an extraordinary real-life operation that brought together the world's most powerful attack aircraft from each of the NATO and WARSAW pact nations for a bombing competition held over the skies of North and South Dakota in 1984.

Strike Aces becomes the first flight simulation package to put Amiga owners in the cockpit of the elusive Russian MIG-27 Flogger-D, in addition to five other aircraft. Each of these six aircraft can be piloted against seven other computer-flown interceptor fighters in one of 16 predesigned missions (of course you can design your own, with the "Mission Design" feature!).

Each fighter has been designed with 3-D polygon technology and possesses handling characteristics reflective of their actual performance. Multiple views from outside of the aircraft (including a special satellite shot) provide a variety of perspectives on each mission in progress, and an external control system lets you view the aircraft itself from any axis.

Each mission is progressively more detailed and more challenging than the last, and your choice of aircraft plays a major role in success or failure in each of the missions you select or design. Each simulated mission ends with issuance of a mission report that evaluates your performance.

Accolade has also announced a new summer promotion which gives consumers the opportunity to mail order a second software title for just \$5, after purchase of one Accolade package at regular price (\$20.00 or more).

Ten best-selling titles—regularly priced from \$14.95 to \$39.95—are included in this "Hot Fun In The Summer Sale". They include *Test Drive*, *Hardball*, *4th & Inches*, *Grand Prix Circuit* and *Mini-Putt*. The promotion is good on all purchases of Accolade software through October 1, 1990.

Strike Aces: International Bombing Competition, price: \$49.95, Accolade, 550 South Winchester Boulevard, Suite 200, San Jose, CA 95128, (408) 985-1700. Inquiry #218

BE A MODELLER, OR JUST LOOK LIKE ONE

Now available in fine stores everywhere, it's the much-touted **3D Professional**, a three-dimensional modelling, rendering, and animation system from **Progressive Peripherals & Software**.

The package gives you the power to create three-dimensional objects, backgrounds, and text, and then whip them into motion with the program's animation creation facilities. Included in the program is "Animation Station", a storyboard, op-code 5 ANIM editor for editing, manipulating, and creating special effects and stereo sound for single or multiple animation frames. Animations may be controlled manually or automatically using scripts of key frames, with the AREXX-compatible script language providing more precise control of objects and animations.

Rotation, scaling, merging, and mirroring are just some of the object manipulation tools available. **3D Professional's** surface and rendering capabilities feature full surface texture control such as marble, wood, and ripple. Up to ninety-nine light sources of varying types, intensities, and direction are available for that true network look. A variety of object file formats, including *Sculpt 3-D*, *Turbo Silver*, and *VideoScape 3-D*, may be loaded into the program. Supported display modes include X-Specs, RGB files, PostScript, and IFF and single-frame output to VTRs.

The **3D Professional** package includes 6 (count 'em—6) disks, 3 tutorial and

PRETTY AS A POSTCARD

If your vacation budget is a bit limited this summer—have we got the perfect package for you! You'll be treated to an endless number of breathtaking landscape perspectives in such faraway places as Yosemite National Park, Mt. St. Helens, Crater Lake National Park, and Olympus Mons, Mars!

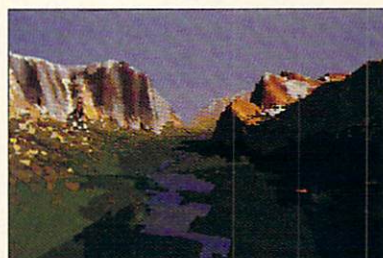
Yes, all of the above can be yours this summer (even though the entire Shuttle fleet is presently grounded), for less than \$100!

Virtual Reality Laboratories, Inc. of California makes it possible with **Vista**, which they proclaim to be "the most powerful and advanced reality simulation software available for personal computing!"

Vista is more than a collection of pictures because the user has full control of camera position, bank, heading and pitch through an easy point-

and-click interface based upon a camera/target model. The "camera" can be placed at any location within the "virtual reality" landscape being viewed. These landscapes are not limited to actual points in the universe as we know it, either, as **Vista** also has 4 billion imaginary fractal landscapes to explore.

A fast true perspective 3-D projection engine, Phong shading, shadows and up to 130,000 polygons per landscape add to the realism. The user is able to control haze, tree/snow lines, position of the sun, color palette, and

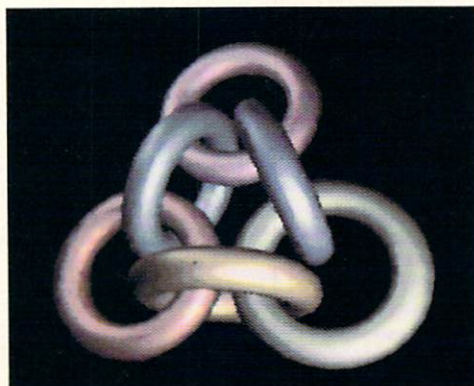


SCENIC
BEAUTY,
COMPLIMENTS
OF VISTA

reference manuals, as well as a 2-hour instructional VHS videotape. A minimum one megabyte of memory is required.

3D Professional, price: \$499.95, **Progressive Peripherals & Software**, 464 Kalamath Street, Denver, CO 80204, (303) 893-6938. Inquiry #215

RINGING TRUE: IMAGE PRODUCED WITH 3D
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camera angles, as well as the creation of rivers and lakes and an erosion function that can be used to "smooth" landscapes. Each landscape produces unique sounds as it is being drawn.

Vista internally draws in 32,000 colors and displays in the 4096-color HAM mode. The program saves images as standard IFF files, and complete landscapes as *Turbo Silver* object files. Support for 640 x 400 x 16-million-color frame buffers, and animations, is available.

Coming soon are expansion disks for undersea exploration, as well as additional sites for further geological exploration on Earth and the solar system at large.

Vista, price: \$99.95, **Virtual Reality Laboratories, Inc.**, 2341 Ganador Court, San Luis Obispo, CA 93401, (805) 545-8515. Inquiry #216

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FREE FALLIN'

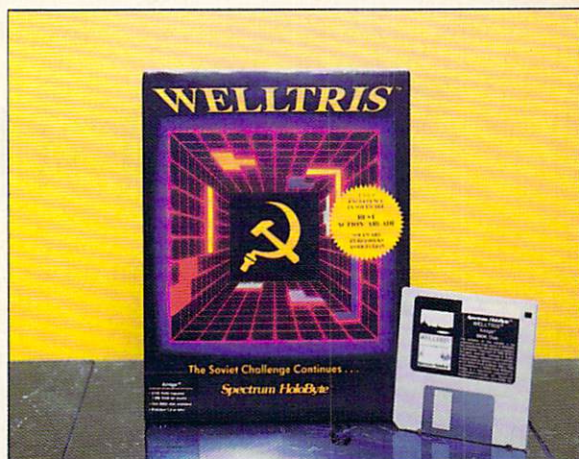
You thought you had recovered. You thought you could walk down the street without the constant fear that sometime, somewhere, a big yellow rectangle was going to come hurling out of nowhere and do you in. Well, prepare yourself for another round of you against *the shapes*, because **Spectrum HoloByte** has released *Welltris*, the second program from Soviet game designer Alexey Pajitov, creator of the very popular, and addictive, *Tetris*.

In this sequel to *Tetris*, the basic objective is again to manipulate various configurations of squares that fall randomly, one at a time, from the top of the playing area, making solid rows

of shapes, with the rows clearing as they fill. In *Welltris*, the player has the perspective of looking down into a four-sided well with grid-like walls and bottom. As the pieces fall, they may be manipulated by being rotated and/or moved from wall to wall.

The game provides three levels of difficulty and five levels of speed to challenge anyone, from those with rock steady nerves to players who break out in a sweat at the sight of that first insidious falling block. *Welltris* also features the ability to split pieces at the corners, and challenges the player even more with bonus pieces of outrageous shapes.

Welltris requires a minimum 512K memory, with 1MB required for sound.



Welltris, price: \$34.95,
Spectrum HoloByte, 2061
Challenger Drive, Alameda, CA
94501, (415) 522-3584. Inquiry
#212

FILLS, CHILLS, & THRILLS

JEK Graphics has made their entry into the Amiga market with the release their first product, *Pro Fills*, a library of over 100 professional-quality, full-color patterns and textures, that lets you bring a big dose of variety to your video and desk-top presentations.

ProFills features a wide selection of 16-color palettes, with each palette having a 6-color range defined for easy drop shadowing and highlights. Patterns and textures can be used separately, or you can mix 'n' match to make thousands of pattern/texture variations. The program includes patterns for both

high resolution (640 x 400), and interlace resolution (320 x 400).

DeluxeVideo III, *KARA Fonts*, *TV*Text Professional*, and *PageStream* are just some of the packages with which *Pro Fills* is compatible.

Pro Fills is available only directly from JEK Graphics.

Pro Fills, price: \$29.95, **JEK Graphics**, 12103 S. Brookhurst, Ste. E-125, Garden Grove, CA 92642-3065, (714) 530-7603. Inquiry #214

WRITING IN TONGUES

Now from **New Horizons**, it's the ability to appear brilliant in several different languages. The makers of the popular

graphic word processor *ProWrite* have made available three new dictionaries for use with the *ProWrite* package.

Available in German, French, and Swedish, these are complete spelling dictionaries, with the German version containing 85,000 words, the French version containing 130,000 words, and the Swedish version containing 150,000 words.

The dictionaries are \$35.00 each and are available only directly from New Horizons Software.

New Horizons Software, Inc., P.O. Box 43167, Austin, TX 78745, (512) 328-6650. Inquiry #213 •AC•

Other Products Received

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Merit Software
13635 Gamma Road
Dallas, TX 75244
(214) 385-2353
Inquiry #209

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Natural Graphics
P.O. Box 1963
Rocklin, CA 95677
(916) 624-1436
Inquiry #210

Thinker, version 2.1
Price: \$80.00
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3721 Starr King Circle
Palo Alto, CA 94306
(415) 493-7234
Inquiry #211

Eschalon Development's

Title Page

An All-In-One Title Creation Program

by Frank McMahon

THERE HAS NEVER BEEN A SHORTAGE OF AMIGA TITLING PROGRAMS ON THE MARKET. IN FACT, MOST OF the programs have been through at least one major update or have been released in a new improved version in the past several years. One problem that some of the titling programs face is that they end up being very close-ended. Sure, most allow you to use your own IFF backgrounds, and some let you use any fonts, but a good titling program should be very user-controllable. As the user's needs change or grow, the program should expand as well.

For anyone familiar with title programs, the basic idea is to quickly create a detailed background, and then overlay and adjust your titles on top.

The latest titling program on the scene is Eschalon Development's "Title Page". Its main objective is to create stunning title pages quickly and easily. But like any good program, beneath its user-friendly interface lies powerful features and special effects that, with a little experimentation, go a long way.

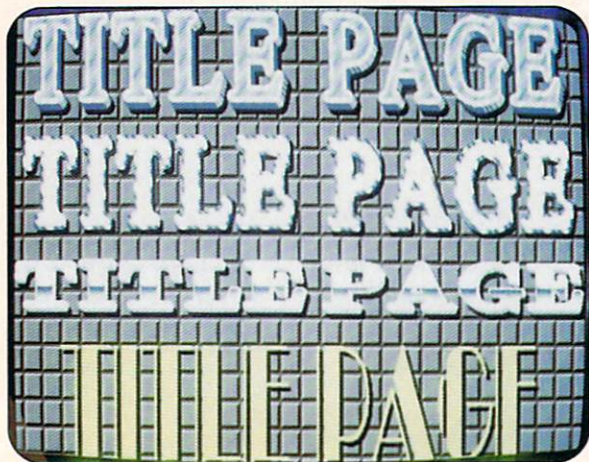
Title Page manages to pack in numerous features that allow the user full control over every aspect of the process. Everything from a built-in slide show with dozens of wipes to the ability to edit special font effects, to full control over screen preferences, including a special mode that allows hundreds of colors on a standard Amiga hi-res screen!

POWER TOOLS

One unique feature is the ability to manipulate brushes to form background screens. Brushes can be created from within the program, in a separate paint program, or chosen from the many built-in brushes that come with the program. Various brushes that come with the program include standard textures such as tile and granite, as well as new-wave designs and a full "Animal" draw (which may not be practical for professional situations, but sure is a lot of fun!). All brushes can be skewed to various degrees and resized to suit.

The brushes can be automatically stamped in a wallpaper or tile layout with adjustable spacing. You can also extrude the brush and add a shadow if needed. Full lighting control allows you to cast a shadow in any direction. Remap is also available if the brush loaded in does not match your currently-selected palette. If you decide not to use a pre-made brush, it's easy to create your own. Basic drawing commands are available that include line drawing, ellipses, and parallelograms. Various colors and sizes are chosen easily with the mouse. You can also do bitmapped drawing with the Pattern Editor, which we'll get to in a bit.

A "draw grid" mode is available, too. Creating the background is very easy, and can be done in seconds. Of course, an alternate choice is to simply load in your own IFF background. All resolutions and bitplanes (except HAM mode) are supported, including "Video" (severe overscan), and I find that most pictures load in with no problem. Various cut-and-paste commands let you cut and arrange any element of your background screen. Thankfully, there is an "undo" feature that lets you experiment with a great deal of freedom. The undo feature



also has a setting that lets you use "chip RAM" or "any RAM" for your undo buffer. Using chip RAM is certainly faster, but takes up precious graphic memory, especially if you lack the Fat Agnus chip.

If you don't have a set background in mind, you can enter the "Pattern Editor" section. As with brushes, there are several directories of pre-made patterns to choose from.

Creating your own is just as easy as selecting a color and drawing in the 16 x 16 pixel edit box. Once you have created a pattern, you can bring it into the main screen and choose "pattern fill" to fill the screen. Control of the colors used to create brushes or patterns is done in the "set palette" screen. One complaint I have with some title programs is the lack of color control. Not so with Title Page. In addition to the usual RGB and HSV sliders, there are commands which let you control spread, swap, copy, and fade. There is also a button which brings up an entire 4096-color palette on screen, making color selection as easy as clicking with the mouse.

BRING UP THE FONTS

After the background has been set, the next step is to decide what font should be used. Thirteen different fonts come with the program, and all can be set in a wide range of sizes, from small to huge. The "Colorfonts", in particular, are pretty impressive. Any type of font should work, and it's very easy to redirect the program to find your own disk of fonts. The font requester looks similar to the now-standard setup used in most Amiga programs: a line to type in your font path when you wish to redirect, a scrolling directory which names all the fonts available, options like "Bold", "Italic", and "Underline", and a sample box that not only shows you what the font itself looks like, but also lets you type in a title for a preview of what THAT will look like. There is also a feature in the font requester that should be a standard in all title programs: "spacing". As the name implies, this option lets you set spaces (from 1-99 spaces) between each letter in a title. This is a very helpful feature that goes a LONG way in creating the right title size.

Once the text is typed in it is automatically rendered using whatever options you have previously selected in the "set preferences". Five different types of justification are available, as well as color options to select the foreground, outline, and shadow hues. Shadows include cast, drop, and transparent. Font outlines can be square, rounded, or even anti-alias. Length of extrude, outline thickness, and depth of shadow are all easily changed. Eight different light sources are available. The preferences also allow you to automatically program the title's colors. Settings can be changed and added onto an existing title repeatedly for some interesting effects.

SPECIAL EFFECTS, EXTRAS, AND HUNDREDS OF COLORS IN HI-RES

No all-in-one title program is without a host of special effects, and Title Page is no different. There are

effects for fonts as well as for brushes. Among the possible special effects are: embossed, circle, littlecross, glow, double outline, punch, midglow, and more. Effects are previewed in an "Effects Editor", and once again, all effects can be worked on with options to change the color, thickness, position, center, and offset, allowing you to build a library of your own effects. Patterns that you have created can also be "effected", and even used as textures for the font face!

In addition to effects, Title Page comes with many other added features, one being the "EXT standard". This allows external programs to be created and added into the program. This is similar to ARexx (which Title Page also fully supports) in that new features and programs within the program can be added by the user or the company. This standard also permits some neat hardware tricks, including the ability to let you design (via the "DList Editor") custom colors on each scan line of the Amiga's display, allowing hundreds of colors in hi-res!

With the "EXT standard", ARexx support, and multitudes of macros that can be easily programmed, this has to be one of the most open-ended Amiga graphics programs ever. It even includes source code in "C" and "Modula-2". Programmers can send their creations into Eschalon Development for possible inclusion into future updates of Title Page. Technical support is always a phone call away if you run into any programming problems.

An added bonus is a separate group of programs—a font handling program, a text viewer, a picture viewer, a script maker, and a script player. When I tried (what I considered to be) these "throw-away" programs, I was amazed to find that some of these extras could certainly be sold as separate programs themselves! The most impressive of the lot are the "Title Page Play" and "Title Page Make" programs, which let you create your own slideshows. Options include wait, ARexx commands, cycle, random, blend on or off, loop, and more.

Among a very generous selection of 45 different transitions are spiral, dice, hexsweep, Xes, moving window, rain, monolith, cloverleaf, and twoclock, plus some wipes and shades. My favorite option is to select "Random", which runs through your slideshow and randomly picks out an effect for each transition. I know we've all seen enough slideshow programs, but there is something incredibly easy and user-friendly about this one, and it certainly comes in very handy when creating a title sequence.

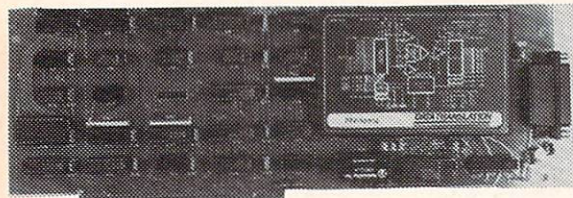
FIRST-CLASS ACT

That's how I describe Title Page and its wealth of features and added programs. So many other title programs make you run through 20 steps to accomplish something basic, or restrict you to preset resolutions and fonts. It is truly refreshing to see a program that offers so many options while still being user friendly. You can make titles as simple as you want, and yet have the power to create some stunning works of art. It's also nice to be

Let ACDA Open Your Real World Window !

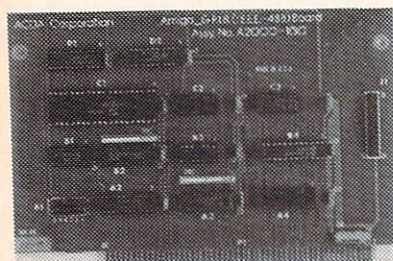
Scientific and Engineering Products for Your Amigas!

PROTO-40K

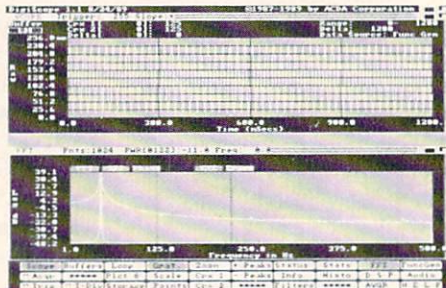


Proto-40K is the first and only fully featured data-acquisition and process-control expansion card for the Amiga 2000. The Proto-40K features a 16 channel 12-bit multiplexed analog-to-digital converter, two 8-bit digital-to-analog converters, a 3-channel programmable timebase, 16 digital inputs and 16 digital outputs. Proto-40K also features a highly stable instrumentation amplifier with programmable gain, multiple triggering sources, and on-board digital waveform generation. Data acquisition and process control projects are a snap to develop with the Proto-40K Data Acquisition System (DAS) software and 'C' source code. Sample application programs and source are included for each of the Proto-40K functions. Now sold in various custom component configurations. Buy only the functions you need. Call for new lower pricing.

Amiga GPIB



Amiga GPIB is a General Purpose Interface Bus card for the Amiga 2000. This half-length expansion card performs all the Talker, Listener, and Controller functions of the GPIB (IEEE-488) protocol. One Amiga can control up to 14 GPIB devices. Includes Command Function Library (ACDA GPIB CFL), test application program and 'C' source code driver. \$495.00



DigiScope

DigiScope is a digital storage oscilloscope emulator that works with ACDA's Proto-5K, Proto-40K or other parallel-port digitizers. DigiScope has 16 independent waveform buffers, a digital signal processing (DSP) package, a Fast Fourier Transform (FFT) package and a filtering package. DigiScope has extensive waveform scrolling functions that work in a resizable scope window in high or low screen resolution. DigiScope offers a complete set of archival functions and the standard complement of signal statistics. DigiScope also features an extensive digital waveform generator package. \$139.95

Shinko & Mitsubishi Preferences 1.3 Printer Drivers

We offer a complete line of thermal color printer drivers for the Mitsubishi and Shinko A&B size color printers. They are 100% Amiga Preferences 1.3 drivers. \$133.00

AmigaView 2.0

AmigaView is an object-oriented, C language, Intuition front-end interface library that provides over 100 easy-to-use routines and macros. Our package features WINDOWS, SCREENS, MENUS, REQUESTERS, GADGETS OF ALL TYPES (including automatic mutual exclusion), BITMAPS, ALL IMAGERY, IFF, TEXT, and much more. This standardized and consistent Intuition/Graphics interface greatly reduces programming time and code space for professional applications development. AmigaView works with both MANX and LATTICE. See AmigaWorld (Sept./Oct. 1987, p.28) for review. \$79.95

Amiga FFT C Package

The Amiga FFT C Package Provides all the source you need to perform detailed frequency analysis utilizing a complete set of Fast Fourier Transform (FFT) routines. The package includes C source for derivation of the Power-Spectrum, Phase-Amplitude Spectrum, Inverse FFT, several window functions and user interface functions. \$152.00

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Circle 104 on Reader Service card.

supplied with lots of built-in fonts, brushes, effects, and patterns, rather than being faced with always having to create or load your own (certainly possible to do here, if that is your preference). And features such as anti-alias and Colorfonts add a professional look. The transparent shadows are another big plus. The screen configurations permit you to set your screen to any size and resolution. The program seems to be very stable.

I was switching resolutions and severe overscan and loading from different directories, all while multitasking with a separate paint program—and Title Page didn't even flinch.

As for problems, I would like to see more tutorials in the manual. After a few blazingly brief tutorials the manual shifts into explaining all the different sections of the program. Were this any other program, the user might wind up lost; thankfully, this program is laid out so well, the manual is really only needed for reference on occasion. While most of the program can be figured out through experimentation, for the sake of new Amiga users, a little more time should have been spent "teaching the ropes" with added tutorials. On the plus side, the manual is thinner than most because it is brief, direct, and to the point.

Another problem: there is no HAM support. However, the ability to have a different color per scan line fills the gap. There is a nice "rainbow" option for the background which looks dazzling. The program takes up three disks (if you are using the included data and fonts)

and is easily installed on a hard drive. It installs automatically, and there are options to change all the drawer and font paths within the program.

The price for Title Page is a little steep, but currently Eschalon Development is offering a \$100.00 rebate if you upgrade from any other Amiga titler or paint program! This offer makes Title Page an unbeatable bargain. Also worth noting is the practical nature of the program. While some title programs are best for professional situations, others are best suited for home use only. This program is really best suited to BOTH settings, and any application will produce excellent results.

If you're looking for an all-in-one title creation program that has loads of options, Title Page is it. Throw in the fact that you can expand and alter the program to suit your own specific needs, and you've got a solid package that should be around for years to come.

•AC•

Title Page
Eschalon Development
2354 Cote Street Catherine
Montreal Quebec
Canada H3T 1A9
(514) 340-9244
Price: \$199.95
Inquiry # 203

The FrameBuffer

An extremely versatile and cost-effective full-sized hardware card that doubles as an output device *and* a video digitizer!

by Lonnie Watson

IN THE COURSE OF BEING AROUND COMPUTERS FOR QUITE A WHILE, ONE naturally comes to appreciate the many great things computers can do. Incredible feats of computing power, like those found in the production of ray-traced images, are commonplace in computer advertising and many other related areas. Quite often these images are displayed on devices called frame buffers. Simply put, a frame buffer is an electronic device called to store and display a single image to a monitor.

In the technical sense, the Amiga's Memory Mapped Display is in fact a frame buffer; however, there is another frame buffer available for the Amiga. This device extends the Amiga's color palette by over 16 million colors, allowing production of some truly fantastic images. It is aptly named The FrameBuffer, and comes to us from Mimetics.

The FrameBuffer is a full-sized hardware card that plugs into any Zorro II expansion slot of the Amiga 2000 series machines. The card can be obtained in two configurations, the first of which simply allows the card to function as an output device. That is to say, you can send the card data, and it then displays that data to any NTSC color monitor. The second configuration allows the card to capture images coming from any NTSC video source. After the image is captured you can see the captured image on the card's video output, in full NTSC color and resolution. Then, using The FrameBuffer's software, you can port that image into any Amiga IFF screen resolution—including HAM. This allows use of The Framebuffer as both an output device and a video digitizer, making it among the most versatile hardware that I have seen.

This little gem of a device sports resolutions of 746 x 484 with a full 16.7 million colors and a fully broadcast-compatible NTSC video output, via a standard BNC connector on the back of the card. The device comes with the necessary software

to allow Sculpt, Turbo Silver, and 3D Professional RGB files to be sent to the card for display. The supplied software also allows the display of any IFF picture. This lets you draw and display images using DPaint, Digi-Paint, Photon Paint, or any other Amiga paint program. The advantage here is that you can display HAM images without the annoying artifacts that occur with HAM displays on the Amiga screen.

The card also continues to display the last image that was sent to it until you either turn the machine off, or send the card another image. This feature has saved me more than once! The output can be taped, displayed on any NTSC monitor, or even genlocked. On one occasion, I created an animation that required the genlocked video to be perfectly still. Being rushed for time, I was unable to obtain the still video needed. The FrameBuffer allowed me to capture the frame and genlock the Amiga graphics over it, creating the intended effect without having to take another shot.

The FrameBuffer's software handles a multitude of file types, permitting great flexibility in what you can do with it. These file types include:

RAW: This file type is not really supported outside of The FrameBuffer's software. It is, in essence, a raw dump of The FrameBuffer's one meg of RAM. The file is split up into two parts: one with a .VID extension, and the other with a .VIDA extension. This allows the files to be easily transported on two floppies (a single file

would be larger than a single floppy could hold). An advantage of this file type is that it can be loaded and saved very quickly.

RGB is the file type created with Sculpt and 3D Professional. A picture in this format is separated into its constituent red, green, and blue data. Each file is stored with the appropriate .red, .grn, or .blu extension (.ored, .ogrn, and .oblu if overscan 746 x 484). Simply give the program the main name of the file, and it will look for each file on its own. These files can also be easily transported on floppies, and I was very successful in getting the files on a single floppy using the PD archive utility Zoo.

RGBn: these files are created by Turbo Silver; Digi-View also is able to have its data in RGBn format. These files have no extension, as each part of the data (RED, GREEN, and BLUE) is stored already compacted in a single file. As such, these files take a little longer to load and save, but they are the only way that Turbo Silver output can be viewed on The FrameBuffer.

As a side note, there is no way in The FrameBuffer's software to save data in the RGBn format. You are only able to read that data format from a disk.

IFF: this is the standard picture format for Amiga software. The FrameBuffer's software lets you select from any of the supported hardware resolutions, from 320 x 200 to 640 x 400. There is, however, no provision for accurate reading of any overscan IFF image except Interlace hi-res overscan (736 x 442). The software also supports 2 to 4096 (HAM) colors, with the exception of HalfBrite. All in all, its IFF support is quite good, with the noted exceptions.

APPLICATION

To the casual user, the way The FrameBuffer works is rather simple. The FrameBuffer card contains one meg of

RAM. It uses standard 256K x 1 bit RAM chips. The card can be purchased without RAM (only empty sockets), but this is not advised as the card itself is useless without the RAM on it, and Mimetics' prices for it are more than reasonable. The card also contains the circuitry necessary to display the image contained in that memory, via a standard NTSC composite Video Out. The image is simply sent to the card using the supplied software, and when the card is finished getting the data the image is displayed. It is important to realize that while the card is receiving the data to be displayed, the composite output is blanked.

This is due to the fact The FrameBuffer's display sections cannot look at its memory while the computer is doing so. While this design does trim quite a bit off the cost, it also prohibits simultaneous access to The FrameBuffer's memory of the computer, as well as to The FrameBuffer's display circuitry. If you buy the card with the Frame Capture option, there will be a few other chips installed that allow The FrameBuffer to capture live video in the memory on the card.

Software control of this device is based on a program called (not surprisingly) FrameBuffer. As of my writing this, there was no way to run this program from the Workbench. Only CLI access was supported (type DF0:FrameBuffer and press return if the disk is inserted into the internal drive).

It is relatively easy, however, to create an Icon for the program. Once loaded, the software presents a window on the Workbench screen. The FrameBuffer window is composed of the four major parts already noted: the RAW section, the RGB section, the IFF section, and the Frame Capture section.

It is important to remember that The FrameBuffer's software does very little error checking. If you tell it to store data to a filename that already exists, you will lose the original contents of that file. Also, stored files in the RAW and the RGB formats are quite large. It is very easy to fill up a disk quickly.

COMPATIBILITIES

Hardware compatibility between The FrameBuffer and other hardware tests very high. I tested The FrameBuffer in configurations ranging from two-drive 2000s with one meg of RAM to full-blown 2500/30s with all the RAM that the machine

can handle. I was even able to test The FrameBuffer in a stock 25MHz A3000, where it worked as usual with no problems. The FrameBuffer's output can be genlocked flawlessly on the ProGEN, SupraGen, SupraGen2000s, AmiGen, mini-GEN, and the ScanLock. I suppose that it will work with any genlock.

The FrameBuffer works flawlessly with a multitude of hard drives, including Commodore's A2090a, Commodore's A2091, GVP's Impact A2000-HC/45, Supra's WordSync Interface for A2000, and IVS's Trumpcard. The FrameBuffer also has no problem in systems that have hardware accelerators, like Commodore's 2620 and their 2630, GVP A3001, and CSA's Midget Racer. All in all, the device is fantastically compatible. I did, however, have a problem getting The FrameBuffer to work reliably in my first 2500/30. This, it turns out, was due to the fact that the 2500/30 in question had a revision 6.1 motherboard in it. Commodore replaced the motherboard with a revision 6.2, and the device has worked ever since.

Daily usage of the card has revealed some pretty interesting things. With its Frame Capture option, I use The FrameBuffer for digitizing as well as to produce video output of ray-traced pictures. I frequently use it to demonstrate digitizing techniques to people who want to do digitized work. On the output side, I am able to ray trace an image of something in, say Turbo Silver, and then display the image on the buffer with haunting realism (the ray-traced images appear to float on the monitor). Very, very realistic images are a snap when you have all those colors to choose from!

At first I felt that the lack of truly high resolution would make my ray-traced work seem less than perfect. Apparently, I was not giving the package enough credit, given its ability to display 16.7 million colors. In reality, NTSC video has a lower resolution, but NTSC video is able to display millions of colors also. It's the color resolution—not the graphic resolution—that makes TV and other NTSC video displays look as realistic as they do.

Creating animations with The FrameBuffer is not that simple. To automate the process requires that you purchase several other devices, such as a Transport controller and a single-frame video recorder. These devices are not inexpensive, and as a result, I practice the old cut-and-paste method of editing separate video

clips into one. This is not a fast way of doing things, but I have been able to create some good ray-traced animation in this manner.

CONCLUSIONS

Problems? Well, there are a few.

First, the model of The FrameBuffer that I received does not have a back plane on it to facilitate screwing it into the case of my 2000. This is perhaps a rather small thing, but I do have friends that have destroyed their computers by having a board come loose because it did not have a screw-in back plane connector.

The software that Mimetics shipped with my The FrameBuffer was unable to properly display Sculpt RGB files with the strange color banding effects that you get on the Amiga IFF screens (this color banding occurs at the edges of smooth color transitions because the hardware is unable to create an in-between shade). Mimetics has since released a bug fix version of the software that does a better job with Sculpt RGB files.

There is also no support for HalfBrite IFF pictures, either read or write. This is an unfortunate, but not severe problem, given the many HAM-to-HalfBrite programs available in the public domain and commercially.

I also have some problems with the way that The FrameBuffer's software works in general. It allows you to select 640 x 400 IFF-resolution and tell the program to decode this in HAM. While this should take a stored video image in the buffer and create a Superbitmap HAM image (for use with Digi-Paint 3), it does not work at all. If there is a problem with a file that is being sent to The FrameBuffer, the software often locks up, forcing a reboot.

All in all, the software does work as stated, but comes with plenty of room for improvement. On the hardware side, The FrameBuffer is fantastic. The device works very well, and I am totally pleased with its performance.

The FrameBuffer may just be the most cost-effective way to get a digitizer and a high-quality, 16.7-million-color output on the Amiga. If you need these things, I strongly suggest that you look into The FrameBuffer.

•AC•

Mimetics Corporation

FrameBuffer: \$549.95

Frame Capture: \$199.95

FrameBuffer w/ Frame Capture

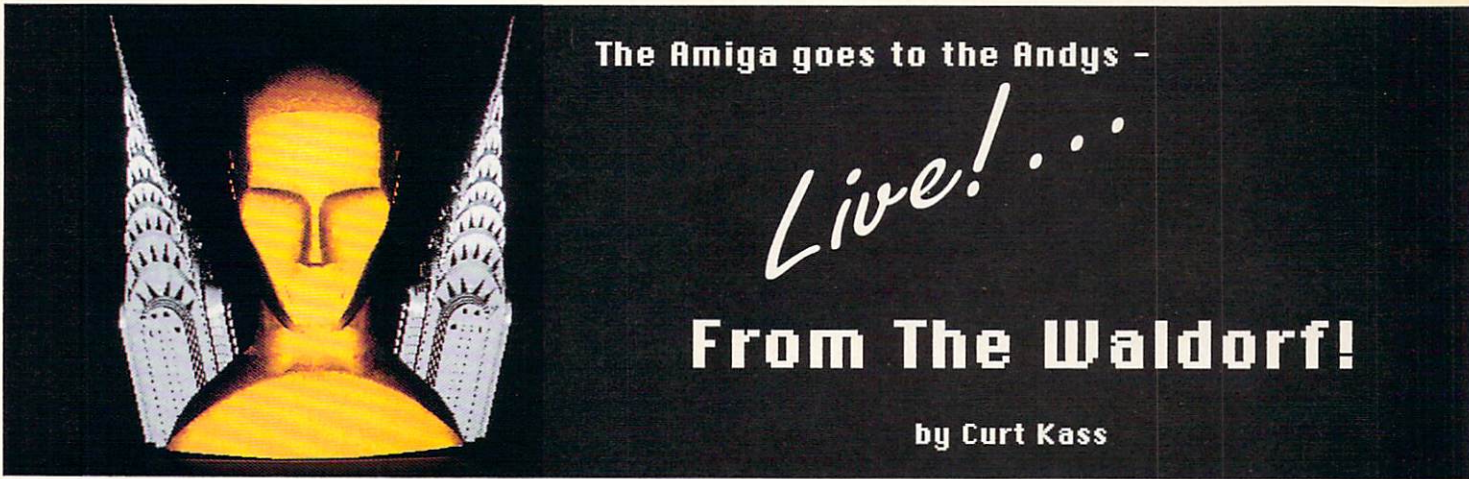
& memory: \$859.00

P.O. Box 1560

Cupertino, CA 95015

(408) 741-0117

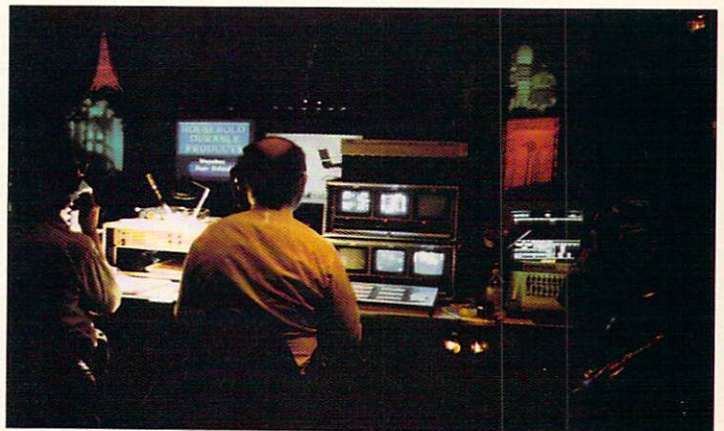
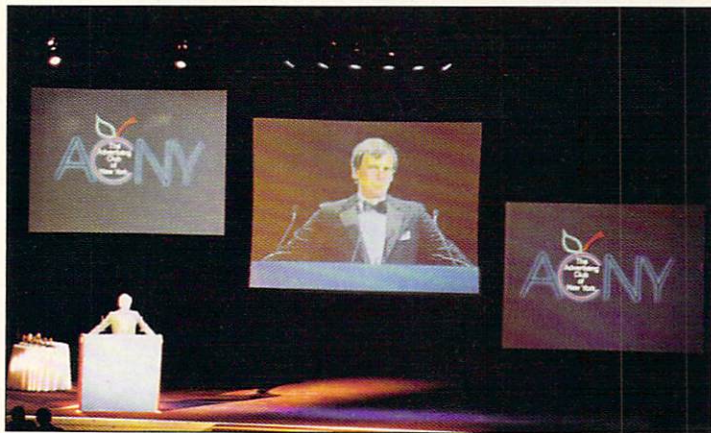
Inquiry # 200



EACH YEAR, VARIOUS MEDIA GROUPS TAKE A NIGHT TO RECOGNIZE OUTSTANDING ACHIEVEMENT among their members by presenting "Best Of" awards to the standout performers in various categories, often at glamorous and well-publicized black-tie events. This year, The Advertising Club of New York presented its Andy Awards to professionals in the field of commercial broadcast and hard-copy advertising at New York City's prestigious Waldorf-Astoria Hotel—and the Amiga was there!

With the Amiga now more than just an underground buzzword in the video industry, what other computer platform could be more fitting to help host the Andy Awards ceremony?

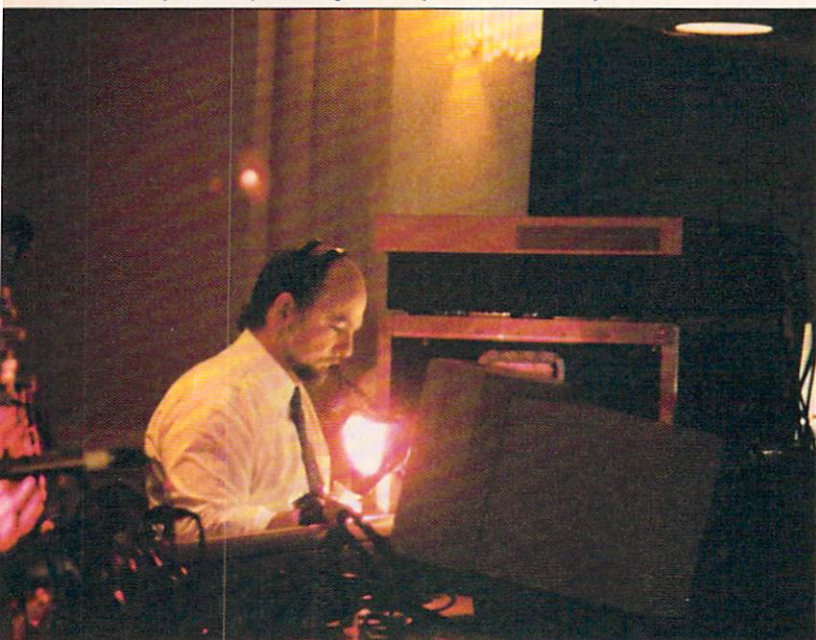
Keith Nealy of The Nealy Group, the man responsible for producing the multimedia show announcing Commodore's launch of AmigaVision and the A3000, again performed his magic in producing the May 3rd Andy Award multimedia live show for the second time, using the Amiga for animation, video effects, graphics, and character generation.



*I'll see you tomorrow night: Andy Awards guest speaker Tom Brokaw (top).
In control: behind the scenes at the Andy Awards (bottom).*

The Nealy Group is a pioneer in multimedia, using computers in lieu of slide projectors in its live productions. Keith Nealy has been involved in video production since the early seventies, helping to create such original ideas as the video wall, long before it was a portable and common video showcase. He was also the first to use a personal computer (an Amiga 1000) in a live multimedia performance, and he now makes frequent use of multiple 2000 series models in his trademarked CompuVision performances. Nealy's extensive live production experience began with large multiple slide show features, but he now realizes that "as good as this type of performance can be, this labor-

*Lonely at the top:
Keith Nealy at work producing the Andy Awards ceremony.*



intensive method is giving way to the inclusion of video and live computer signals."

The Nealy Group was also represented at the Andy Awards by Amiga operators Tony Dispoto and Eli Tishberg.

Mr. Dispoto freelances 3-D animation produced mainly in Sculpt 4-D for The Nealy Group productions. He works on an Amiga 2000 with a 68020 accelerator, Targa and AT Bridgeboard relying upon Active Circuits, Inc.'s ImageLink software. He is a self-taught artist who can be found regularly conducting master classes in Amiga 3-D modeling and rendering at AmiEXPO conventions.

Mr. Tishberg designed the bulk of the Andy Award ceremony titling, using KARA FONTS and DeluxePaint III, converted into Shereff Systems, Inc.'s Pro Video Gold. By day, Tishberg works at a major postproduction facility in Manhattan, where he regularly creates productions like MTV music videos on all manner of high-end computer graphics workstations.

IMAGINE THE CHALLENGE OF ORCHESTRATING a live video performance for many of the top professionals responsible for producing television and hard-copy commercials! Those who produce TV commercials usually have at least some flexibility and room for error, given the opportunity for "retakes" (within their deadline restraints). Being in the field of live entertainment, however, leaves The Nealy Group with no such luxury, but only rehearsals to prepare for each production. During this event, there were few clues that the visual presentation was not a pre-archived show. The tightly paced and well-designed performance was a "feast of delights" for eyes and ears. The Nealy Group's professional execution under the scrutiny of these talented advertising professionals generated much well-deserved applause.

Of course, "multimedia" refers to the use of several different formats of presentation simultaneously, to create a single entertainment or informational production. On this occasion, The Nealy Group used a wide assortment of media, including three industrial-strength video projectors, five carousel-type slide projectors, a 1/4-inch multichannel audio tape recorder, a sound mixing board and amplifier, three professional videotape recorders, a Sony portable CD player, and three Amiga 2000s, two 68020s and one 68030 upgraded. Three crews ran the show: one for set-up, one for presentation, and one for tear-down. The coordination, timing, operation, and administration of this assemblage was awesome.

A live performance of any kind naturally entails preparing for fulfillment of Murphy's Law (anything that can go wrong usually will). The Andy Awards production was no exception. Though the crew was on the scene at dawn, scheduling delays and equipment setup did not even allow for a

(continued on page 43)

Longer, Faster, Smoother Animations With Only 1 Meg

BREAKING THE RAM BARRIER

by Frank McMahon

FOR THOSE OF YOU WITH ONLY ONE MEG OF RAM AND LACKING THE LATEST accelerator or processor, you may feel left out as the speed demons create larger and faster animations. Well, you don't have to feel this way. Armed with a few simple techniques, you can actually produce larger animations than you presently may think possible, and at the same time clock faster processing speed!

BITPLANES IN ANIMATION

Many users overlook the "Bitplane" option that is included in almost any animation program. Bitplanes actually control how many colors are used. When you boot up DeluxePaint III you are given several color choices, from 2 to 64. Now if you are painting, 64 colors might be best ... but maybe not with animations. After loading up DeluxePaint III in 64-color lo-res mode, choose "expanded" from the ANIM menu and then go to "frames-set #". As you will see, the computer tells you how many frames you can have to work with; on my machine it's 25. If you switch to 2-color mode with the "Screen Format" option in the "Picture" menu and then set your frames, you'll see it has changed to 176 frames ... quite a difference! The fact is, the more colors used for each frame, the more memory each frame needs, and the smaller your animation becomes. Admittedly, a 2-color animation may not be too thrilling, but if you are only generating titles or logos, 2 colors may be perfect.

Sculpt-Animate 4D also has a bitplane option that is sometimes overlooked. HAM animations devour memory at an alarming pace, so working in "Painting" mode is much preferred. Many would argue that the shading is not as good in the "Painting" mode (which uses

only 32 colors instead of 4096), but there is a reason for this. Most animations include cars, streets and objects using all kinds of colors.

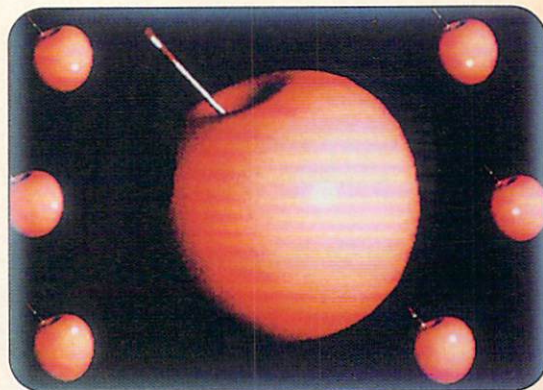
There is just no way to accurately provide correct shading for all these multi-colored objects with only 32 colors.

The key is to limit your animations to fewer objects with equal or similar colors. While this may seem to be limiting, in the world of graphic design, it is in fact preferable to use fewer objects in a related color scheme. Look at your living room as an example. Maybe it has a dark red carpet, brown chairs, wood paneling, oak shelves, etc. Many animations fail to look realistic because the author adds in a bright green chair, glowing blue walls, etc. By using fewer objects with similar colors you are: (1) saving lots of memory (less ANIM changes from frame to frame), (2) applying more shades of a primary color to correctly and realistically shade an object, and (3) avoiding an animated video eye strain! By doing this you can avoid having to use the HAM mode, and by limiting yourself to fewer colors with room for much more shading than before, suddenly your solid color renderings begin to approach the realism of ray-traced (4096 colors) animations.

The next logical step in saving memory is going down from 32 colors. If you are animating a spinning logo in Sculpt-Animate 4D, try making the logo one or two colors and change the bitplane to only 16 or 8 colors. While the shading will not be quite as good, you'll be simply amazed at how much larger you can make your animations, while also rendering speed improvements 100% to 700%! So, who needs a 68030?

ANIMATION CHANGES

We touched on limiting your animations to fewer objects, and it's important to stress that "more" is not always better in



"Apple" animation rendered in just 64 colors, using various shades of only the color red instead of the usual 4096 colors.

computer animations. While initially lots of spinning and flying in the ANIM looks pretty jazzy, it's a short fuse that burns the viewer out quickly. Think of any of your favorite Amiga animations you have seen over the years.

(continued on page 44)

Making Credits The Easy Way

Credit Text Scroller

by Frank McMahon

CREDIT TEXT SCROLLER IS THE SECOND RELEASE IN MINDWARE'S "Video Solutions Series", the first being DigiMate III. While DigiMate III lets you control DigiPaint via an ARExx port to create animations, Credit Text Scroller is a self-contained program which creates animations itself. Also, it does not require ARExx to run.

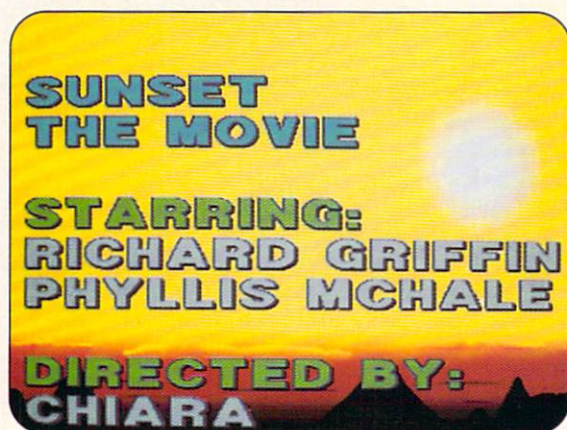
As the title implies, this program creates credits similar to what you see at the end of TV shows, in standard ANIM format. This is one of the first programs to generate credit ANIMs for the Amiga, and its modest price invites some investigation.

Before you even run Credit Text Scroller, you must first create the text you wish to scroll. This can be

It is very important to have a clean file and to make sure your spelling is correct, as Credit Text Scroller does not have any editing options, save for a basic line-by-line cut and paste.

Also, prepare any graphics or animations (all formats including HAM, half-bright and overscan are supported) that you plan to scroll your credits over. If you are just scrolling over black, or over video via a genlock, then backgrounds in all resolutions are provided from within the program.

Lastly, figure out where your fonts are going to come from. Any Amiga-compatible bitmapped font will work, but you need to direct the program to find the fonts on your hard drive, Workbench, fonts disks, etc. Unfortunately, there is no way to switch from within the program, so it's necessary to journey into AmigaDOS and use the "assign" command. An easier way is to boot off the disk which has the fonts you want.



Credit Text Scroller easily creates moving credits over any IFF background.

done with any word processor program, or even by using ED on your Workbench disk. Don't worry about spacing, font size, or centering—these will all be controlled once you enter Credit Text Scroller.

READY TO ROLL

Once Credit Text Scroller is loaded, you are presented with the main option screen, which is where all the text and graphic files are selected prior to processing. The window on the right is the "Text" window and that on the left is the "Background" window. Clicking "Load" on the Text side brings up your directory and allows you to load in your file.

Once a file is loaded, it is displayed in the window. Here is where any necessary last-minute

cutting and pasting is done. On the left side you can load in your background graphics, animation, or any one of several blank backgrounds, in several resolutions.

Besides the normal 64-, 32-, and 16-color backgrounds, there are additional backgrounds of only 4 colors (2 bitplanes) each. In generating text-only animations (with a few colors for shadows and borders) these 4-color backgrounds greatly reduce your animation sizes.

BACKGROUND AND TEXT MANIPULATION

After you have chosen what graphics and text files to use, enter the "CTxt" screen, which is sort of an edit-bench. This displays your text in the default font over the background screen. In the middle of this screen is a large proportional text scroll gadget. This is used to move your text up and down when editing. Clicking on this gadget brings up a "pop-up" menu with a large choice of edit options, such as palette color and text justification.

As are most Mindware products, Credit Text Scroller is written under the T.A.S.S. system, so there are no clunky pull-down menus or keyboard commands. Everything is accessed by clicking on a gadget that opens a pop-up menu.

In fact, on the "CTxt" screen, you can click anywhere, and in an instant the full menu of commands is under your mouse icon! Move your mouse over anything you are unsure about and hit the "Help" key, and a full screen of docs appears on the command in question to (hopefully) save the day.

The first step in preparing credits is to select the font you want to use. A big plus for this program is that it lets you see a font before you select it. You can select a font for the whole list of credits, or select on a line-by-line basis, with different fonts for different lines. The next decision is made via the palette control panel, which displays all 4096 colors (similar to the panel of colors in Photon Paint). You can either click on the color you want, or mix your own with the RGB sliders.

Lacking are controls for things like hue and spread, so you may want to create your backgrounds in DeluxePaint first, to give you more control over altering colors. You can also change the color of your font, font shadow, and font border. Once the colors are set, you can arrange your text. Centering, right/left justify, and set edge are available on a global or line-by-line basis. You can change the amount of space in between each line using "LinesPerPage".

ANIMATION OPTIONS

After all the text and colors are adjusted, you are ready to generate the animation. Now, it's important to note that this program does not do scrolls on-the-fly. It generates an animation of a scroll which can be played or loaded into a program such as DeluxePaint III (use it as an ANIMbrush in Perspective mode to create something like that seamless "Star Wars" intro).

Before you begin to create the ANIM, choose "LinesPerFrame". The requestor that appears lets you set the number of lines (one pixel high) the text will move up from frame to frame. Moving one line per frame of

course makes things progress very smoothly, but also makes the animation hundreds (or thousands) of frames long. Moving several lines a frame cuts the size of the animation way down, but the smooth transition from frame to frame is lost. Experimentation is the key. My own best results are achieved with the LinesPerFrame set at one and using only four colors and low or interlace resolution. More memory helps on all counts, although the program runs fine with only 512K.

RENDER TIME

Now it's time to "GenerateANIM" or "GenerateSLIDE". SLIDE will make the text slide in from either side of the screen and then slide back out. It's rather limited and not as effective a feature as crawl, for example (hint, hint). ANIM will create a regular scrolling credit crawl and automatically insert a blank screen before and after.

How long the ANIM will take to generate depends on resolution, length of text, frame amount, and lines per frame. Most simple ANIMs take under five minutes. Long involved credits may take quite a bit longer. It's about as fast as doing the same thing with DeluxePaint III (but without all the messy coordinates). After it is done generating you can play it through once, then set it up as a loop to try out different frame rates. Using DISKANIM you can play directly off RAM, hard drive, or floppy for a preview.

Also included are numerous image- and ANIM-processing features which allow the conversion of your backgrounds and animations to and from different resolutions (even convert a regular ANIM to an overscan ANIM) as well as splitting, cutting, and pasting ANIMs. Credit Text Scroller is fully ARexx-compatible, which means if you own the ARexx system software you can control the program remotely. ARexx is a development system which, when used with compatible programs, lets the user get "inside" the software program and alter features and control commands with far more flexibility than a standard interface could hope to provide.

CONCLUSIONS

Overall, Credit Text Scroller is a solid performer that does what it advertises. Its On-Line Help is a big plus, and the manual is easy to understand. This program does not require the use of ARexx (so you don't have to spend extra money on a program you may get minimal use out of), but the ARexx port is a big plus for those into programming. Everything from the fonts to colors to text positions can be changed instantly in the process of editing—this lets you create very quickly. Credit Text Scroller is very user-friendly, and its T.A.S.S. system of pop-up menus allows you to move around and choose freely. Low-res, 2-bitplane backgrounds are supported to allow those with 512K or 1 meg machines to create large animations.

A winning feature lets you create scrolling credits over existing animations. I personally have found scrolling credits to be very difficult to do in DeluxePaint III and this program not only does it easily and automatically, but it then lets you load your work back into DeluxePaint III for further manipulation.

ATTENTION

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So what's wrong with it? Well, thankfully, not much. One problem is that pages of revisions and additions (to the manual) must be printed out before you can begin working with the software. Now, I'm all for making improvements to programs and manuals along the way, but it's wrong for Mindware to assume that everyone who buys this package has a printer (printers are not high on the "must have" list for the video users this program is aimed at). Nowhere on the box does it say that the buyer needs to print out revisions and additions to the manual. It should be noted, however, that eighty percent of the docs are new features and improvements; only a few of them represent corrections.

An abort key—to halt animation generation when a long ANIM is not turning out as you had hoped—is really necessary, but lacking here. Palette flexibility could be enhanced through the addition of a few more features. As any Amiga video person knows, color choice is a primary factor to be considered when putting text over anything.

While in the "Change Screen Palette", I hit the front/back gadget and the palette went to the back, but the program was suddenly no longer in my control. Mouse clicks would not register, so I had to reboot. I repeated the steps with the same result. While there are other ways to exit the palette, new users should be careful to exit only via "OK" or "Cancel".

HAM animations produce mixed results and cause larger file sizes, so while HAM is supported, I do not recommend its use. The program is not at fault, it's more an outgrowth of HAM fringing.

I recommend Credit Text Scroller only for the home hobbyist and smaller video businesses. It is probably useful in professional situations only where there is ample memory (2-4 megs) to let the scrolling take place one line (1 pixel wide) at a time, as well as enough RAM and disk space to work in the higher resolutions. One meg chip RAM helps too, and although the end result is bigger animation files, the results are smooth and quite professional.

If you need to produce scrolling credits, and your budget prevents you from purchasing one of the much higher-priced character generator programs, Credit Text Scroller's price/performance ratio can't be beat.

•AC•

Credit Text Scroller

Mindware International

110 Dunlop W. Box 22158

Barrie, Ontario, Canada L4M 5R3

(705) 737-5998

Price: \$39.95

Inquiry #202

Some Graphic Suggestions

Shooting Scripts, Budgets, Telecommunications: Other Ways To Use Your Amiga In Video Production

by Bill Burkett

OKAY, SO EVERYONE KNOWS THE AMIGA'S A GREAT COMPUTER FOR TERRIFIC-looking, low-cost graphics. But, as someone once said, "Producers cannot live by graphics alone." At least, I think that's what he said. And what I think he meant was, "What about the rest of the video production process? How can the Amiga help take care of some of the other day-to-day chores of keeping a production—and a business—on track?"

Although computers have as many uses as the software people can dream up, most "traditional" computer business applications fall into one of four categories: number-crunching, data-crunching, word processing, or telecommunications. Each of these can be applied to the business end of video production, as well as to the production process itself.

BUDGETING

Before there can be a show, there has to be a budget. One of the most efficient ways to develop a budget is with a spreadsheet program. Fortunately, several good Amiga spreadsheet programs are available, any of which will serve your purposes nicely.

Setting up a simple spreadsheet to help you estimate and track costs can take just a few minutes. All you really need to

know is how much a particular item costs, how much of that item you're likely to use, and how to make the spreadsheet total all the items. And don't forget to add in your fee!

Once the estimating is done, it's useful to have another column in your spreadsheet to record actual costs. This not only helps you stay within your budget, but also serves as an aid in creating more realistic estimates for future projects.

PREPRODUCTION

Many producers believe preproduction is the most important part of the entire production process. In short, preproduction consists of designing the program and planning, in detail, how you will execute it.

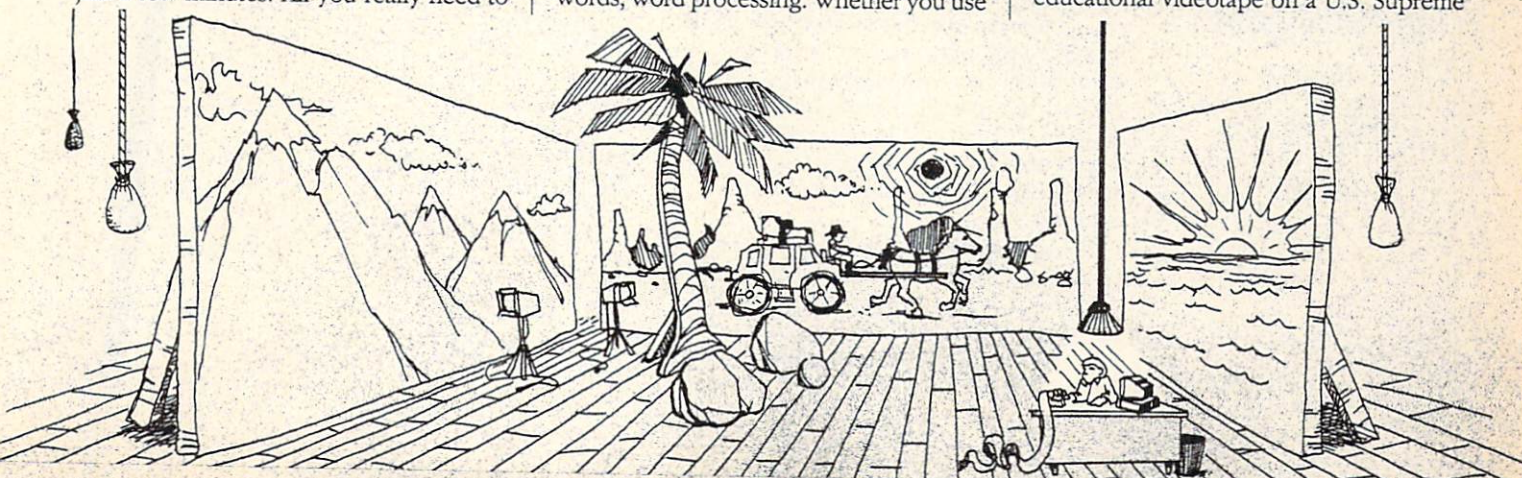
The most obvious preproduction activity is probably scripting—in other words, word processing. Whether you use

the traditional television script format, or prefer a more complicated screenplay-type script, Amiga word processors offer all the power you need to develop professional-looking documents.

If you wish to take your scripts a step further, you might want to consider preparing a storyboard. A storyboard presents not only the written portion of the script, but also includes sketches showing what will appear on-screen during the program. All you need to do is prepare the drawings with your favorite paint program, then import them into the script with one of the several word processors designed for this purpose. The resulting document can be a very effective aid in helping your client feel like he or she is getting what they want.

In the course of writing the script, you may have the need to do some original research. This is one instance where telecommunications can help. Even though they can be expensive to use, commercial databases offer a quick, nearly painless way to sift through the tons of information available today.

Here's an example: The local bar association contacted me to produce an educational videotape on a U.S. Supreme



Court decision. Although the client provided copies of the decision and a great deal of expert advice, I needed specific information on events leading up to the case itself, so I could

script a fairly accurate reenactment.

I called the computer network to which I subscribe for a check into one of its many databases. Within a few moments, I had references to over a dozen law journal articles that could provide me with the information I needed. I took this list to the local law library and found that one of the

references mentioned the name of the defendant's original attorney. Tracking her down was easy and, in the span of a few hours, I had a full account of the case from one of the people actually involved in the case. Total cost: About \$40, but it saved hours—perhaps days—of searching for information by more traditional methods.

Some colleges and universities, as well as public libraries, allow members of the public to dial directly into their card catalogs, disk-based encyclopedias, or periodical listings. Check with your local library to see if it offers such a service. If it does, you may find the power of electronic databases at your disposal for free.

PRODUCTION

With the exceptions of graphics development and budget tracking, many producers leave their computers behind once a program moves into production. They're missing the boat! During production, two of your Amiga's most basic uses should come to the forefront.

Having a good, complete script is vital to a production. Unfortunately, a good, complete script often contains a lot of information you really don't need once you're in the studio or on location taping. Besides, the script is a chrono-

logical representation of the program: It has things laid out in the order they will appear in the program. During taping you'll often want to shoot out of sequence, thereby avoiding the need to set up your equipment in the same location more than once.

This is where the "shooting script" and a database program come into play. A shooting script is a logistical, rather than chronological, listing of all the visual elements in your program. That is, it lists everything in the show in the order you wish to shoot them, rather than in the order in which they will appear in the finished program.

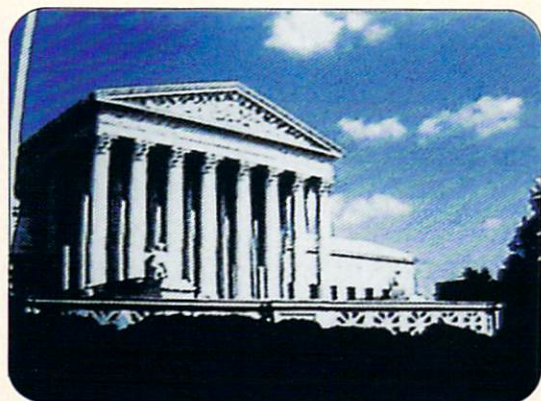
Developing a shooting script can be quite a chore, unless you let the computer do all the hard stuff. Here's how it is done: Using macros, have your word processor delete everything from the script except the individual shot (or scene) numbers and visual descriptions, and save the resulting, condensed document as an ASCII text file.

Next, run the database program and import the visuals-only script into a pre-formatted, but "empty" database. Putting the condensed script into the database allows it to be reordered in any way you choose.

Then, divide the script-cum-database into subsets, one for each location, and identify which visual within that subset you want to shoot first, which second, and so on. Add whatever miscellaneous notes you think will be helpful during the shoot, and have the program print the condensed script's visuals—still in their

ESTIMATED COST OF PRODUCTION PROJECT TITLE: "DIMENSIONS" (Revised)			
	RATE	ESTIMATED USE	ESTIMATED COST
EQUIPMENT RENTALS			
VIDEO CAMERA		1	266.75
3-TUBE	250.00 / DAY		
VTR		1	96.03
3/4"-A	90.00 / DAY		
3/4"-S	150.00 / DAY	1	160.05
MISC AUDIO	200.00 / DAY		
MISC LIGHTING	200.00 / DAY	1	213.40
EDIT SYSTEM			
3/4"	425.00 / DAY		
INSURANCE	5% OF RENTALS		453.47
AUDIO PRODUCTION/POST-PRODUCTION			0.00
STUDIO (AVR)	65.00 / HOUR	3	208.06
MUSIC	75.00 / DROP	2	160.05
TALENT	150.00 / DAY	0	0.00
	300.00 / DAY	2	640.20
VIDEOGRAPHER	200.00 / DAY	0	0.00
ANIMATION	PER QUOTE		0.00
PROPS			
VIDEO POST-PRODUCTION			
3/4" OR 1" ON-LINE (AVR)	530.00 / HALF DAY	1	565.51
MATERIALS			
TAPE			
1" VIDEO	50.00 / 30 MIN	1	53.35
3/4"-S VIDEO	15.00 EACH	8	128.04
VHS VIDEO	6.00 EACH	3	19.21
AUDIO	10.00 EACH	1	10.67
TOTAL COST OF PRODUCTION			3,188.20

...many
producers leave
computers
behind once a
program moves
into production.
They're
missing the
boat!



From this...



...to this. Turn a "grabbed" frame of video into a stylish graphic background by transferring the image among various software packages via IFF files.

subsets—in the order I've specified. Voilà: A shooting script!

The other basic computer function you can implement during production involves combining that old standby, graphics, with another old friend, telecommunications.

I usually produce my own static full-screen graphics. But when it comes to animation, well, we all have our weaknesses. So I rely on a local Amiga artist to produce the animations I need. As luck would have it, though, he lives across town, a good half-hour away. To save time, I modem a copy of the full script to him, along with the shooting script list of the graphics I need produced, and, if necessary, a few pitiful sketches to show what I've got in mind. We talk on the phone a bit, then he goes to work.

In a few days he modems the drawings he plans to base the animation on and, perhaps, a brief portion of the ANIM itself, for my perusal. If approved, the artist gets the go-ahead to finish up, eventually shipping the completed animation back to me—by modem, of course—saving literally hours of driving.

As long as we're talking about graphics, don't forget to take full advantage of the benefits the IFF standard offers. As an example, we'll use the law-related education production I cited earlier.

We needed some full-screen graphics summarizing the Supreme Court's ruling in the case at hand, using a photo or other representation of the

Supreme Court Building in Washington, D.C. as a background. We were unable to find any original Amiga artwork of the Court Building and didn't want to infringe on someone else's copyright by simply digitizing an existing photo. Luckily, another client of mine had some original stock footage of the Court Building and offered to let us use it.

Our first step was to grab a frame of the footage and save it as an IFF file. The image was a very wide view of the front of the building, including a lot of the Court's surroundings that we simply didn't want. So, we pulled the IFF image into a paint program and created a brush of the part we did want, enlarging it to fill the entire screen. This gave the image a grainy, mosaic look that fit very well into our overall plan for the graphic.

The next step was to incorporate an image-processing program to soften the colors and mosaic look, so the text that was to be added would stand out more. Finally, before adding the text, we returned to the paint program for some final touch-up work.

What made it all possible? IFF compatibility. If only one of the four programs we used in this process had confined itself to a proprietary file format, we'd have been done for. Once again, one of the Amiga's unique properties made it happen.

POSTPRODUCTION

Postproduction is that phase of putting a program together that involves taking all the pieces you've created

during production and assembling them into a finished show. Computers are most often associated with postproduction in terms of computer editing. And there are combinations of hardware and software available that allow the Amiga to serve as an edit controller, a very effective use of your Amiga in postproduction. It can also be very expensive.

This can be avoided. You can use one of the many commercial or public domain slideshow programs to keep your graphics in order and ready for first-generation insertion into your master videotape. These programs permit you to display graphics, sometimes with a snazzy transition between them, at the push of a mouse or keyboard button. Many will also play animations, giving you push-button access to all those great images the Amiga is so famous for.

Add the capabilities provided by a program such as ARExx, which allows you to automate functions between (and within) otherwise separate programs, and you've got a system that gives you more power over software than you may have thought possible!

Why not take advantage of all the potential the Amiga offers? Next time you drag out your favorite word processor, communications program, or database manager, look at it with an eye toward finding some new way to apply it. You might be surprised at what you find.

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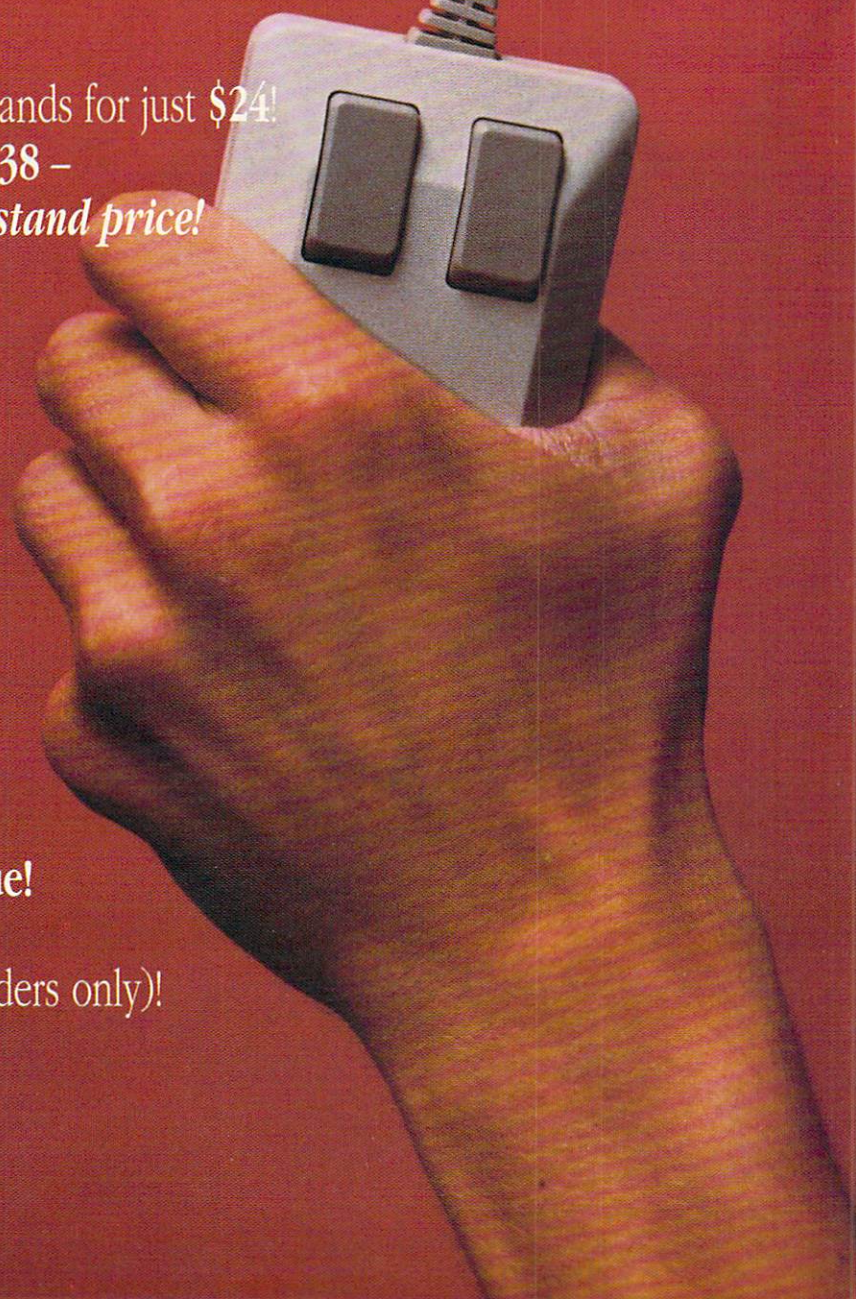
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S-VHS-compatible genlock gets high marks for signal quality and design

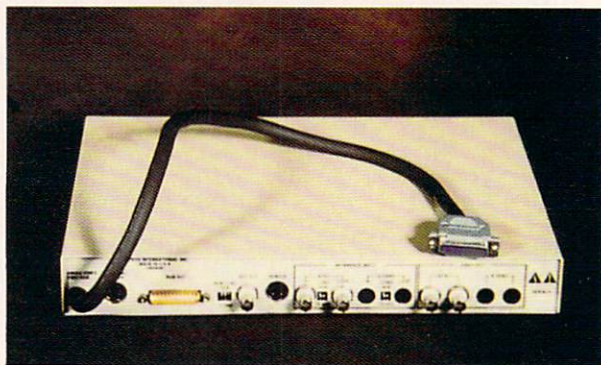
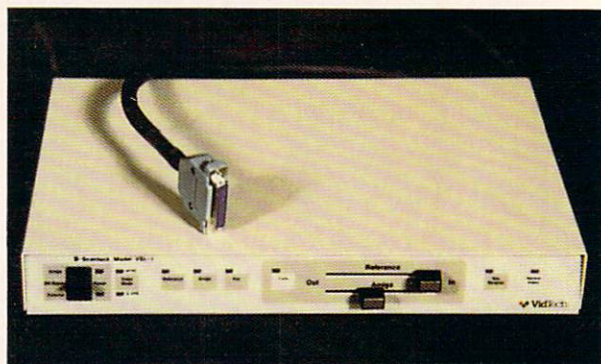
VidTech's ScanLock

by Oran Sands 3.0

THERE IS CERTAINLY NO SHORTAGE of genlocks available for the Amiga. But until recently, you either bought an expensive one or a cheap one, and in either case got the quality you'd expect, given the price. A medium-priced genlock was hard to find. There were a few exceptions, but they became increasingly undesirable as Amiga video enthusiasts turned to Super VHS as their preferred tape format. Indeed, nowadays I hear nothing but "We want our S-VHS," and any genlock manufacturer ignoring this fact is headed for ruination. Well, maybe not ruination—but you get the idea.

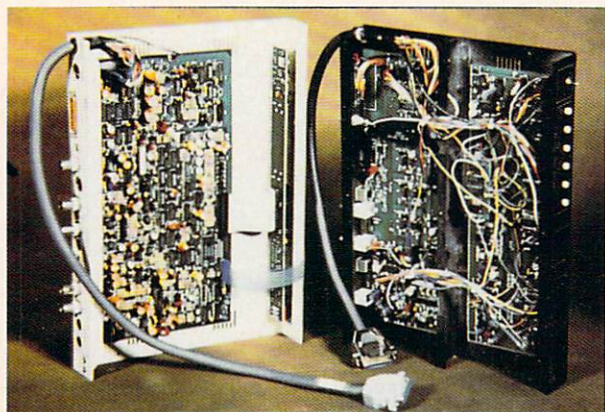
VIDTECH'S SCANLOCK

S-VHS compatibility is one of the reasons I became interested in VidTech's ScanLock Model VSL-1 genlock for the Amiga. The other reason is its packaging. In fact, the



packaging is so intelligent that I still find myself asking why no one else used it earlier.

ScanLock VS. SciTech Genkey



A Case of Mistaken Identity

WHILE VIDTECH IS FAIRLY NEW TO THE AMIGA market, they have found themselves saddled with someone else's reputation

The ScanLock is a new genlock, but is being confused with an older product that earned a bad reputation among its many users. That genlock was the GenKey by SciTech, a Miami-based video equipment company. GenKey was actually the first genlock to be delivered to the public, and it offered the standard genlock features. GenKey was eventually upgraded to use S-Video signals.

The downside of the SciTech unit was that it often crashed, or wouldn't start up without a reference signal.

The ScanLock allows the use of chroma/luma (Y/C) inputs as well as outputs. It performs the usual job of keying (overlaying) of Amiga graphics that you would expect of any genlock/keyer for the Amiga. But there are several features of the ScanLock that deserve mention.

THE FRONT

On the front panel you'll find an on/off touch pad switch. It lets you use the Amiga's power to run it (not recommended with an A500), to use an external power supply (recommended by myself just on general principles), or to turn the genlock off.

Why the last feature, you may ask? If you've ever used an external Amiga genlock, you know what a pain it is to remove your genlock and then attach it again when you want to use it. With this "OFF" selection, the computer ignores the fact that the genlock is attached when you reboot the computer. This feature could be added to every genlock for the price of a simple switch, but so far it appears only on the ScanLock and The Magni.

NTSC & S-VHS

Next, you'll notice the NTSC/S-VHS switch. It selects which mode the genlock uses for its input. This switch activates the selected jacks on the rear of the unit, allowing you to keep both jacks connected to your sources without conflicting.

VidTech states that all their signal routing of the S-VHS signals maintains the separate chroma/luma signals through to the output. Some genlocks supposedly combine the signals into one, perform their operations with the resulting composite signal, and separate the signals again before outputting them (but I haven't yet found one that does this).

Next to that switch there are three more touch pads for selecting the output of the genlock. You may select the Reference signal being fed to the ScanLock, the Amiga graphics only, or the combined, overlaid picture. Selecting any output takes place during the vertical interval, enabling you to switch between them with no glitches or signal interruptions.

Next to the output selectors are a couple of sliders and another touch pad labeled Fade. Activating the Fade feature is also done during the vertical interval for a glitch-free selection. The faders give the capability to separately fade to black either the

Amiga graphics or the Reference video. This allows you to fade the Amiga's overlaid graphics in and out, or to fade the Reference video out from under the overlaid graphics, leaving black under them.

"Split" the faders right and left and move them to their opposite sides, and you'll be able to fade from the Reference video to the Amiga graphics, or vice versa. Be careful—the fader knobs (on my ScanLock, anyway) are a little loose!

The faders work nicely, but there is one hangup worth noting. When fading both signals to black at the same time, the output video sinks below 0 IRE units. The NTSC standard doesn't allow anything but sync signals to exist with negative IRE levels. Although you may have no problem using it with your equipment, you might also find that fading both to black causes your monitor to "jump" just as you approach the all-black picture, with your television deciding that it has a new sync signal to use when it encounters the video at negative levels.

Avoid fading both signals to black at the same time, and this problem is eliminated. Different monitors and VCRs of course respond differently to this condition, so don't assume that because it looks good at home that it will look good elsewhere.

The last feature on the front panel is the **Key Reverse** switch, also selected during the vertical interval. It reverses the key so that color 0 is no longer transparent, but all the other colors are.

PACKAGING

The ScanLock is attractively packaged in a beige case (but, hey guys, I'm tired of beige computer gear) that is designed to go under the monitor. This design allows the user controls to be put on the front of the unit, and the input and output jacks on the rear where they need to be. This keeps the RGB cable short to avoid signal loss and interference problems. With this design there is no need for extra space behind your computer as with some genlocks. And with the genlock on/off switch, you don't ever have to detach it, so it can stay safely under the monitor. As noted earlier, I give the ScanLock top marks for its packaging. I hope this type of design catches on with others.

THE IN'S AND OUT'S

The ScanLock is equipped with many inputs and outputs. On the rear of the unit there are BNC jacks for the composite signal in-

The GenKey took so much power to operate that it actually blew up some computers. Still, with nothing else on the market it was tolerated. In the meantime, SciTech has closed its doors.

This is where the stories—and perhaps reputations—of the units get further muddled. A few of the former engineers at SciTech went to VidTech. They took with them the knowledge of what they had learned at SciTech, and were able to quickly tool-up a new unit, partly by using the same package design originally used at SciTech. Thus, the ScanLock and GenKey units even look identical, and that fact soon gave rise to the belief that the ScanLock was the old GenKey.

Study the photographs carefully and you'll see that what is inside the two cases couldn't be more different. While the ScanLock is a nice six-layer board, the GenKey is made of two boards connected by wires! You are literally able to move one wire close to another in the GenKey; the resulting induction of signal crashes the machine. Wiring of this sort in a device like a genlock is unheard of, and problematic at best! When fed with a standard VHS signal, the output of the GenKey is erratic, whereas that of the ScanLock is stable. There is a world of difference between the two.

— O.S.

puts (with loop thru and selectable termination) and outputs (yes, there are two). Next to those are the S-VHS mini-DIN jacks for the input and its loop-thru.

Loop-thrus are used when you need to send the signal to more than one place. Terminating switches are next to the jacks and are used when you aren't going to use the loop-thru feature (not using the terminations when not looping thru can result in excessive signal levels and degraded video; be sure to read the manual on their use). Finally, next to the composite video outputs are two S-VHS outputs.

EXTERNAL POWER

The rear panel also has a jack for attaching an external power supply, an option which can be ordered separately from VidTech if needed (although no mention is made in the manual of just how to do this). Since my ScanLock is not connected to such a power supply, I cannot comment on the operation of this feature.

MONITOR HOOKUP

A DB23-pin connector for hooking up the Amiga monitor is available, complete with more switches for terminating the RGB signals, should you decide not to use an RGB monitor. The terminations are 75 ohm resistors, the video industry standard. No problem, except that none of the Amiga RGB monitors use 75 ohm terminations. If the genlock is adjusted for a certain monitor and then is used without it, your Amiga graphics will change in level; generally, dimmer if the ScanLock's RGB terminations are used, brighter if they are not used.

This is caused by the fact that the RGB signals from the Amiga are merely "tapped" by the ScanLock, and are not buffered before being sent to the monitor. Unfortunately, this is a common oversight made by several genlock manufacturers.

ADJUSTABLE SIGNAL SPECIFICATIONS

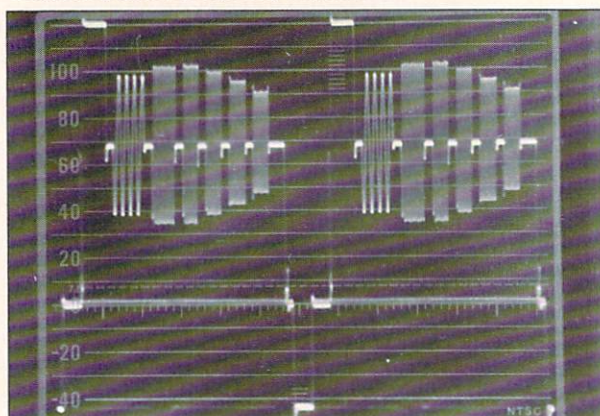
I mentioned adjusting the ScanLock. Externally there are three adjustments accessible by the user. You may adjust the Amiga-to-Reference, signal horizontal timing, and hue. This is not the same as adjusting the combined signal's horizontal and burst phase for timing the Amiga into a studio system. There is also an adjustment for the luminance (brightness) level of the Amiga graphics.

All of these adjustments are found through three holes on the right side of the ScanLock. The actual controls are buried about 1-1/2 inches into the case. Most screwdrivers that are long enough to reach the controls are also too big to fit thru the holes. Either remove the case cover, or drill larger holes (there has been talk at VidTech about including a screwdriver with the genlock, to use for this purpose).

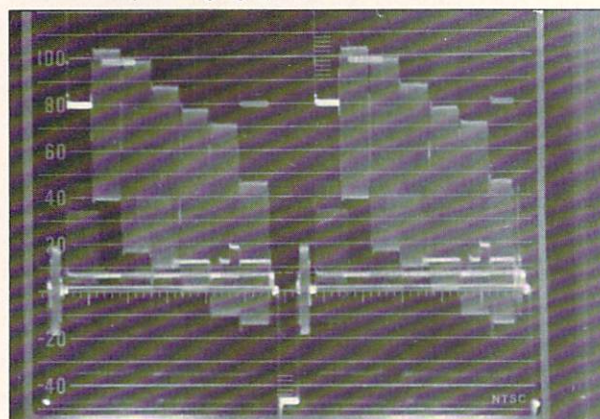
There are a large number of controls inside to adjust the ScanLock for your particular Amiga computer/monitor combination (for more on this see "Gambling with your video, Amiga-style" in AC V5.4). Under no circumstances attempt to make any adjustments without calling VidTech first. I have found them to be quite helpful when requiring information on how to adjust the ScanLock.

One reminder, though. Adjusting any genlock output without a waveform monitor and vectorscope is an exercise in futility. If you don't have access to these devices, find someone that does. Otherwise—don't touch it. And don't think you can adjust a genlock for your computer and/or monitor when it is attached to equipment other than your own.

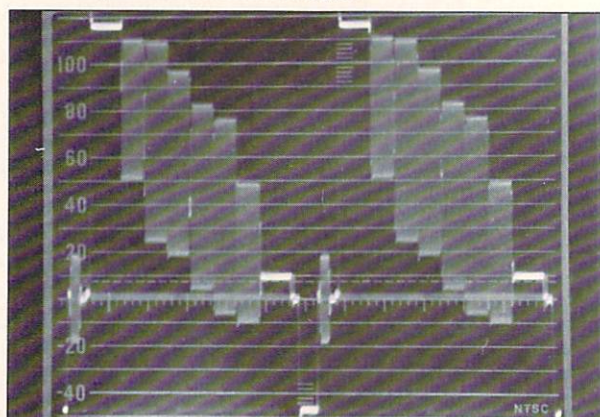
ScanLock pass-thru frequency response



ScanLock output-Amiga graphics



ScanLock pass-thru of reference signal



You'll also find an External Key output jack. Although I've seen this on other genlocks, it has never been correctly implemented, except for on a few. Unfortunately, the ScanLock is not one of those few. The signal level is TTL level, about 4 volts peak-to-peak, instead of the industry standard of .7 volts. That level may and may not work with some broadcast keyers. If not, a simple resistive divider will likely correct it.

The construction of the ScanLock is excellent, using a six-layer printed circuit board for reduction of noise. Some of the early units tended to be a bit unreliable (as most new products are), but since then all units are "burned-in" for a minimum of 12 hours before being shipped. VidTech also reports that they were supplied parts that "crept" out of tolerance as they heated up. These parts have been second-sourced since the problem was discovered.

The most common complaints to the company concern luminance and chrominance levels, and are most easily adjustable. An occasional complaint is registered about timing errors; they are cured by a simple adjustment of the 28 MHz clock.

TEST RESULTS AND CONCLUSIONS

The unit I tested was more accurate when attached to an A500, so that is the unit I tested it on. I also used the latest incarnation of the 1084 monitor in my tests.

I found the image quality to be good, with no visible flaws in the picture. The tests demonstrated that color is not altered upon passing through the ScanLock, and although the frequency response is peaky and not flat, no resolution is lost. Not perfect, but pretty good.

The composite signal looks good visually. The S-VHS signal looks substantially better, as expected. There is a definite improvement in clarity, and the signal is artifact-free.

The Amiga graphics are accurate in hue and level. Any discrepancies are further reduced by adjusting the genlock as mentioned above. The pictures are the "before" pictures. Most of you need to know how the unit performs when shipped, not how good it can be made to be (since many of you reading this don't have the technical knowledge to perform the necessary adjustments).

Using the ScanLock is rather simple. The manual takes you through the installation process. I use the genlock with an Amiga 1000, an A2000 and an A500, all without an external power supply. The unit operates fine without it, but the faint of heart should definitely invest in the optional power supply. Regardless of what computer I use with it, it fits well on top of the computer and under the monitor (in the case of the A500, between the monitor and whatever stand it was on). If you have a A500 and no monitor stand, then I'd also invest in one of those.

All the controls are easy to find and use. The elastomeric touch pads do not give the user any tactile feedback but there is an LED that lights up to show your selection of that feature. If you press off-center you may not activate the selected feature.

The faders work smoothly and the image fades out in a linear manner—move the slider just a little, and get just a little bit of fade. As I mentioned before, the knobs are a little wobbly, and this can affect your fade. Removing the knobs, or gluing them on, seems to be the only answer.

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My computer never glitched, nor did it Guru, during the tests I performed. The ScanLock never needed a Reference video signal to sync up to. Removing the reference signal never interrupted the Amiga, although you may find that applying a reference signal causes a picture offset, as the ScanLock re-genlocks the Amiga to the video signal. This is not a moment at which you'd be taping anyway, so it's just a minor problem (and inherent in any genlock).

Overall, I'd have to give the ScanLock good marks for packaging, features and signal quality. It's a good package at a good price for the serious video amateur, or the industrial video producer on a budget, particularly anyone desiring to work in Y/C.

My only real complaint concerns the non-buffered monitor outputs, which introduce an uncertainty about the correct video output levels of the Amiga graphics when using different monitors. Countering this is the fact that the unit is very adjustable, and VidTech has been most cooperative in helping adjust the unit to produce its best possible signal.

•AC•

ScanLock

VidTech International

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(305) 477-2228

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Inquiry #206

TITLE SCREENS THAT SHINE

Adding Light Sources With DeluxePaint III

by Frank McMahon

BEING THE PRODUCTION SUPERVISOR AT A CABLE TV COMPANY, I DO A LOT OF public relations work with various organizations. My friend and former co-worker Catherine, who now works at a nearby hospital, came to me recently and said the hospital was producing a video to be shown to patients in their rooms.

The video—entitled “Patient Education”—needed an opening logo. Catherine already had the logo drawn; we just needed to “do something with it.”

Knowing it was for a hospital, I understood that the logo had to be depicted in a clean and classy animated intro. The following tutorial goes through the steps to creating this animated logo. The hints and tricks contained herein are easy to do yourself, and the end result will look 100 percent professional. It goes to show that by following a few simple steps, you can create title screens that “shine” just like the networks’.

Figure One shows the logo. This was digitized from Catherine’s original artwork with Progressive Peripherals’ FrameGrabber. I shy away from the two-color “line-art” mode because unless you are using hi-res, you tend to get jaggies. I use 32-color, lo-res interlace and grab it in black and white. This gives excellent anti-aliasing shading (no jaggies), uses only 16 colors (with 16 left over), and allows you to use DeluxePaint III’s Spread feature to change the two colors (background color on one end and logo color on the other) to any colors you

want, with anti-aliasing intact. Time to load it into DeluxePaint III.

At first I thought a nice shadow under the logo might look good. Shadows are easy to design in DPaint III: just click the right mouse button and stamp down the background color. However, in most cases it is best to stamp down (using the COLOR option from the MODE menu) a color that is half as bright as the background. In this case, it would be grey. No need to switch to half-brite mode; just copy the color white in the palette register to an open slot and slide the Volume to half of the original intensity. Or, just use a grey from your black-to-white spread. Don’t switch to half-brite mode; that just adds memory and more colors that you don’t need!

Another option (as pictured) is to stamp down a regular black shadow (choose black, then COLOR from the MODE menu) and before you stamp your original over it (slightly above and to the left), pick the largest circle brush and select SMOOTH from the MODE menu. Rub the sides of your black box until they are all smooth, then stamp down your logo. ➔

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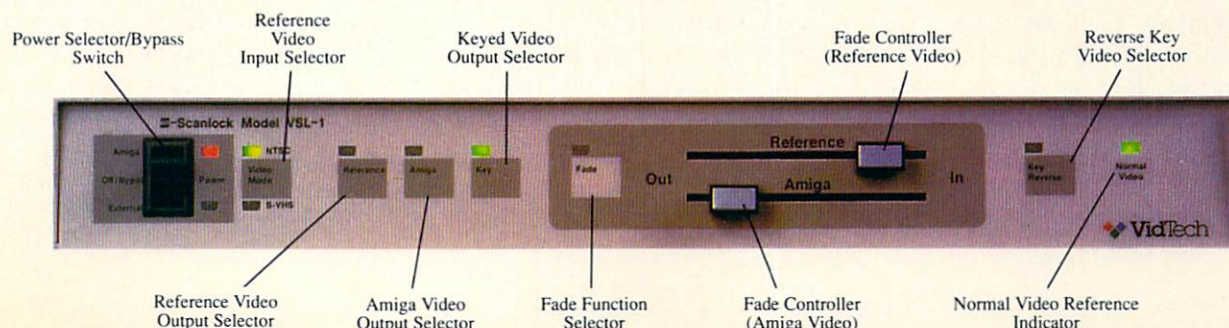
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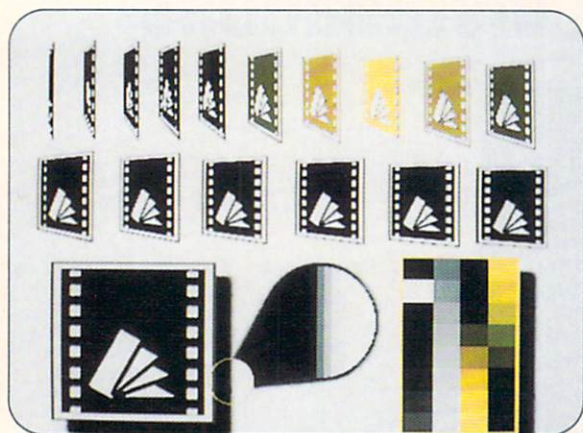


Figure One

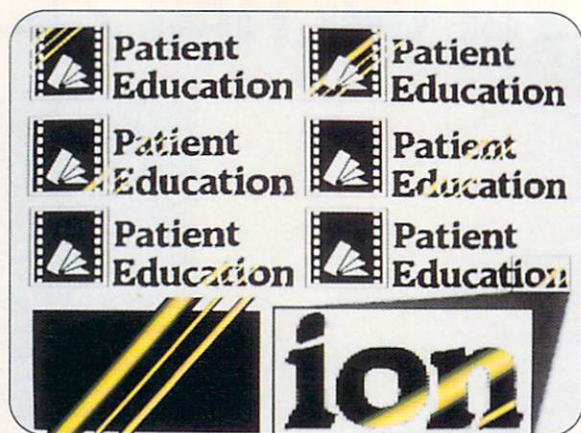


Figure Two

The latter two examples go a few steps further in producing more realistic shadows. Most shadows in real life are not stark, hard, and black. They are soft and eye-pleasing. Light shadows in art can accent your creations. Black shadows are really too artificial... like a computer screen! By the way, for the smoothing technique shown, you need a black-to-white spread in your palette (next to logo), because what it's actually doing is creating a mini-spread (see magnifying glass in Figure One). Anyway, in this particular case, I felt the logo needed more than a shadow—it needed to be more, well, animated!

First thing is to start from a 2-D flat side view and have it spin around 90 degrees, until it is a full front view. Very easy to do: just create some frames (we'll use 16 here), stamp down your logo on the first frame, click on Undo, go to the MOVE register, type in 90 degrees in the "Y" angle box and click in the "go to" direction box, then preview, to check it. If it looks OK, hit Draw. Now you have a logo that spins from the side into full view. Now we're going to add a light source.

With your second (unused) set of 16 colors, create a black-to-gold-to-black spread as shown in Figure One. Then go to frame one in your 16-frame animation. Using the Fill tool, color the first frame logo in with the first color used in your spread (which is black). Go to frame two and fill in your logo with the second color in your spread. Repeat the process "next color-next frame" until

you have done all 16 frames and used all 16 colors (with frame 8 being pure gold). Then play your animation.

Not bad, eh? A normal spinning logo becomes a black metal object spinning around as it reflects a golden hue of light! The most important thing is, like the shadow, it looks more "real". A real metal logo spinning would always reflect light in the real world. Experiment. Use longer spreads. Have your object spin and reflect first a bright blue light, then a soft golden light!

Well, our project is almost complete. I felt it would look good to have a gold reflection of light pass over the entire logo/title, after the logo has spun for a bit and the title type has made its appearance. Figure Two shows various frames of this final animation. The first thing to do is to take the same black-to-gold-to-black spread and make a column. To do this, set it as a "range" in the palette, click your right button on the Fill tool and display the "Fill Type" register. Choose the side-to-side (middle) gradient and slide the dither all the way to the left (no dither). Go to your swap screen and clear it to a black background then draw a couple of long thin columns of various sizes right next to each other. Finally, pick them up as brushes and with the "Shear" option in the BRUSH/ROTATE menu, tilt the set of columns about 45 degrees until they look similar to the three columns in the lower left corner of Figure Two.

We've created our glint of light. Now let's put it in motion.

First, create enough frames so the motion is smooth, but flashes by as real light would. After you've created the frames, create a stencil that locks out all colors except your gold-to-black spreads and the black color of the logo/title. Once this is done correctly, you will be able to take your gold brush and pass it "behind" your logo/title under the white background. Next, move the handle of your brush ("Place" under the BRUSH/HANDLE menu) off to one side so you can stamp it down off screen.

Finally, just stamp your gold brush down off screen to the left and go into the MOVE register. Since we want to move it along its "X" axis, type a large number (around 500 or so for overscan, lo-res interlace) into the "X" distance and click on the "go from" icon in the Direction section. Spend some time previewing. Try different distances, speeds, and numbers of frames. When it looks good, hit Draw, and you will see an animated golden light passing over your logo/title! Also try different gold (or any color) columns. I recently did one large column instead of three smaller ones, and it looked excellent as well.

In the end, Catherine loved the way the animations came out, and the hospital has been running it at the beginning of its program ever since. Most simple graphics and animations can be improved through just a little extra work. Making flat artwork take on a real 3-D textured look is what the Amiga excels at and it's that extra "shine" that will really grab people's attention.

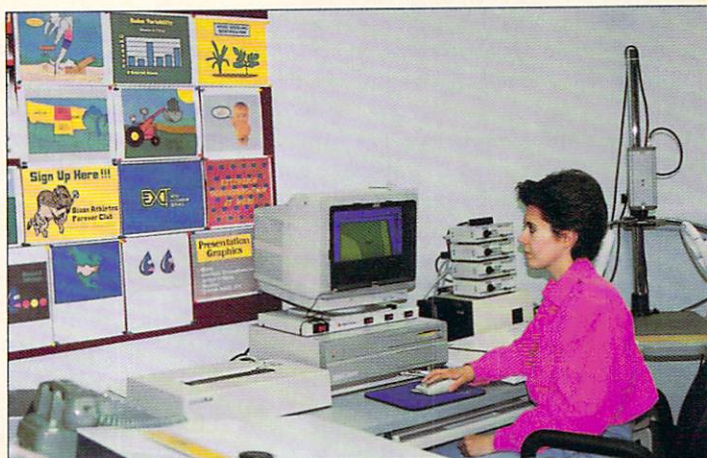
•AC•

Desktop Video in a University Setting

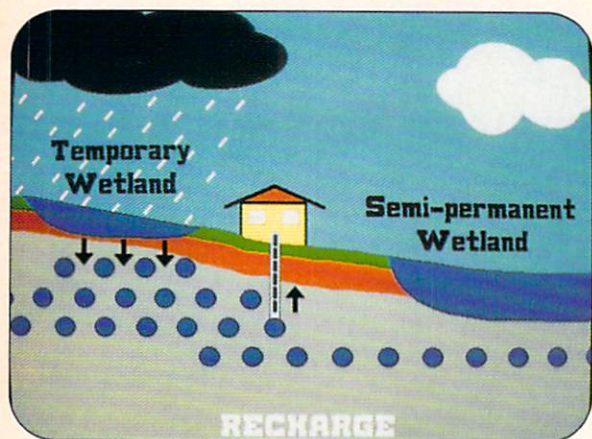
by John Steiner

AS A LONG-TIME RESIDENT OF North Dakota, I have become accustomed to the disdainful remarks and jokes—usually made by acquaintances of mine who live in more populated areas of the country—which poke fun at my state of residence. However, while North Dakota may have a reputation for being “out in the sticks,” its universities enjoy a reputation for being among the best in the country. The campus of North Dakota State University, located in Fargo, provides an unsurpassed atmosphere for learning. When the Amiga first arrived on the scene in late 1985, the North Dakota State University Extension Service was just beginning to look for computer equipment to assist the staff in its presentation graphics and video production departments. The Extension Service is responsible for disseminating information and research from the University to the residents of North Dakota via workshops, extension classes, and a network of offices located throughout the state. Over the years, the Extension Service has expanded on the services it does provide, requiring consideration of computer systems to assist in the production of instructional media for Extension Service specialists and other University departments.

The video production facility is responsible for providing informational and instructional videos for the Extension Serv-



At work at the North Dakota State University Extension Service: Graphic Artist Sherry Reisenauer (top) and Video Production Assistant Randy Cadwell (bottom).



Left: Figure One
Right: Figure Two
Both scenes are
from animations
produced by
graphic artist
Sherry Reisenauer.

ice. Instructional video production has always been a priority and, early on, a large percentage of the Service's budget was allocated to renting time in professional video studios that had video-titling equipment. Video production staffers soon saw the Amiga as a way to bring production fully in-house and reduce costs at the same time.

Their first system was an Amiga 2000HD with Pro Video Plus software and DeluxePhotoLab. They put the Amiga to work immediately, integrating it into their 3/4-inch Sony professional video-editing system via a Digital Creations SuperGen genlock. At virtually the same time, the Extension Graphic Arts department began looking for a computer system that could be used to create color slides, transparencies, and other presentation visuals, as well as to generate animations which would be used to further enhance instructional videos.

Staffed graphic artist Sherry Reisenauer looked at several systems that were then currently available and decided that the Amiga provided the most features and the best cost/performance ratio. Before getting an Amiga system, all presentation graphics were painstakingly generated by hand. Now over 60 percent of Sherry's work is computer-generated. And with word having gotten around about the high-quality graphics being produced by the department, her services are that much more in demand. Large displays and poster graphics are the only works that are not fully computer-generated in her department, and some of these often contain some Amiga-generated parts.

The final system Sherry chose for her work consists of an Amiga 2000HD with a complete line of Amiga graphics accessories. The computer has been

equipped with 3 MB of RAM, an Advanced Graphic Adapter (flickerFixer) from Microway, a NEC MultiSync Plus monitor, SummaSketch graphic tablet, Polaroid Palette with Imprint software from American Liquid Light for making color slides, a Digi-View image digitizing package, and a Hewlett-Packard PaintJet printer. The software she selected for the graphic arts workstation consists of Pro Video Gold, DeluxePaint III, Turbo Silver, Professional Draw, and Professional Page.

Sherry also chose two useful accessory packages: Pro Video Font set and the Professional Font Library from Classic Concepts. Sherry uses DeluxePaint III for most of her work, with Digi-View to assist, and an HP ScanJet connected to an MS-DOS system that is available in their department. She uses a program called Hijaak on her MS-DOS system to convert the scanned files into IFF format, and Dos-2-Dos to transfer them to the Amiga. DeluxePaint III is her animation program of choice, and she assists the video production department in generating hi-res animations for use in their instructional videos.

One such animation [See Figure One] demonstrates how ground water is recharged during the hydrologic cycle. The animation shows the landscape with underlying strata. Storm clouds form, and rain begins falling. The animation then goes on to demonstrate how the water seeps through the topsoil, and travels via temporary wetlands underground, thus recharging the water table, and supplying semi-permanent wetlands (wetlands that dry up during the hotter seasons) with a renewed supply of fresh water.

The production, entitled "Wetlands: Our Timeless Treasures," [See Figure Two] also uses an animation to demonstrate wetland flooding. As temporary wetlands are

drained, semi-permanent wetlands overflow, creating downstream flooding. The animation demonstrates how the wetlands overflow, causing floods to occur downstream.

Video Production Coordinator Jerry Rostad and Video Production Assistant Randy Cadwell are responsible for creating most of the video projects for the Extension Service. Their first Amiga 2000HD system has since been replaced with an Amiga 2500/30. The 2000HD is being used as a graphics workstation, and its IBM Bridgeboard is used to run a specialized video scripting software package. The 2500 is also connected to a FrameGrabber, which allows the digitizing of images directly from videotape. In addition to Pro Video Gold, they are now using TV*Text Professional, Zuma Fonts and Kara Fonts for their video titling applications. They also have DeluxePaint III, which they use to create more sophisticated title animations. The Sony RM450 video editor is connected to a state-of-the-art 3/4-inch Sony recorder and player, and the SuperGen genlock output is integrated into their system so that video titles can be overlaid onto the player's video output.

Jerry is eagerly awaiting the NewTek Video Toaster, and he is quite sure that the Toaster will be the Extension Service's next major acquisition. They will be moving to larger facilities within the next two years, and expect to use the Amiga in interactive video applications. Beyond that, they have only just begun to think about interactive multimedia presentations, but you can be sure that the Amiga will continue to be the central core of their interactive multimedia operations for a long time to come.

•AC•

(*Andy Awards*, continued from page 24)

complete rehearsal. When I arrived one-and-a-half hours before show time, multiple checks and rechecks on equipment and scripting were still in full swing. On site since five a.m., the harangued crew exhibited a bit of pre-show tension and there were isolated cases of "nerves breaking out", but such anxious moments were quickly joked away. As difficulties cropped up, they were effectively traced and buttoned down.

The Group was positioned on the center balcony of the Waldorf-Astoria's Grand Ballroom. Below the balcony, a myriad of tables was prepared by an army of waiters for the media people attending the award ceremony. Three large video projection screens filled the stage area, and still video images illuminated the side stage walls, providing a colorful frame for the live video still to come. On schedule, the ballroom floor filled with several hundred attendees, and the Master of Ceremonies welcomed all to the 1990 Andy Awards.

Members of The Nealy Group instantly directed their highly charged sense of anticipation into actual execution of the production—it was very much a concerted, smoothly run effort. Nealy and his call manager effectively directed orders into their headset mikes; video projectors flashed into life as the soundtrack resounded throughout the ballroom.

The all-important opening video piece—a clever and humorous assemblage of live video, animation, and special effects, trademarked a "corpOrock" by The Nealy Group—introduced the Andy Awards panel of judges, but included no credits to indicate that the Amiga was used to create the great computer graphics and video effects.

Nevertheless, behind the scenes, the familiar profiles of three Amiga 2000s stood out among the stacks of assembled equipment and miles of snaked cables. Certainly, the thought of the Amiga as the command center for a professionally produced multimedia live presentation paints an exciting picture!

Mr. Dispoto and Mr. Tishberg were virtually glued to their 122-page scripts, monitors, keyboards, and chairs for the entire production. On cue they keyed commands to call up graphics and titles stored in their hard drives using Pro Video Gold

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Circle 110 on Reader Service card.

software to accompany 30-second TV spots and still ad graphics. The bulk of the work was designed, rendered, and saved in the weeks preceding the show.

It is important not to overlook the fact that the mastery here is twofold: the conception, design and creation of the graphics and sound comprise the raw data for a live performance; but ultimately, the responsibility to bring this data together in a successful presentation rests squarely with the director. Given Mr. Nealy's vision, creativity and gumption, we cannot be surprised at the degree of his success.

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ABOUT THE AUTHOR:

Curt Kass is a 3-dimensional artist and designer, teaching art and design at the elementary and college levels. His business, Ontological Survey, has provided educational consulting in personal computer graphics since 1986. Part of Computimation, a collaborative Amiga effort, Kass provides specialized animation services.

Chances are good that most of them actually contained very little motion. In fact lots of motion may have an adverse effect and distract from the overall intention. If you have ever tried to make several large objects move in various directions, you know with only 1 meg you usually run out of memory pretty fast. One example of how to save memory would be as follows: instead of making a big spaceship move across the screen, have several small stars in

BITPLANE CHART

1 Bitplane	- 2 colors
2 Bitplanes	- 4 colors
3 Bitplanes	- 8 colors
4 Bitplanes	- 16 colors
5 Bitplanes	- 32 colors
6 Bitplanes	- 4096 colors

the distance move and maybe have the ship sway slightly as it remains stationary in the middle of the screen. Creating the effect of motion in this case looks more realistic and cuts down on total frames needed (a loop animation of stars perhaps).

The thing to remember is, the more changes in your animation, the larger the end result will be. With just a few changes in your animation, you can actually have a finished product that lasts several minutes.

ANIMATION SPEEDS

Less memory brings up another point ... speed. Some of the more involved animations tend to get a little sluggish as they play on a 1-meg machine. The reason for this is, not only does each frame take up a bit of the computer's memory but with the "Anim" format, the computer must calculate the "changes" from frame to frame. In DeluxePaint III the reason you can have long animations is the computer only plays the CHANGES from frame to frame. That's why a tiny bouncing ball can last for thousands of frames and a half-page-sized ball may limit you to only 30 frames. There are a few ways to correct the speed. First

would be to make sure there are very few changes from frame to frame, so the computer doesn't have to spend as much time calculating.

The best way to get perfect uniform speed is to switch to "expanded" mode in DeluxePaint III. Expanded mode does no calculating of the changes from frame to frame. Instead it just "flips" the pages in true animation tradition. While in most cases you end up with fewer frames to work with, since the computer must store an entire page instead of each "change", you get much more uniform speed and the computer does not bog down with calculations. Before doing any animation, try expanded mode first and see if you have enough frames to work with ... you are guaranteed much smoother results. If you need more frames, the default "compressed" mode does just fine.

ANIMATION PLAYERS

There are numerous animation players in the public domain that can be used. Also, most animation programs, including DeluxePaint III and Sculpt-Animate 4D, include separate player programs. What is the advantage to using these separate players? Well just about everything. You will definitely see your compression calculation, animation speed, and smoothness all improve when using a player. When you run your animation program there is very little room for much else to run smoothly. By "quitting" the program you obviously free up that large chunk of RAM otherwise occupied by the program.

Most players take up very little memory, allowing your animations to run longer, and a lot more smoothly.

HARD DRIVE MEGA-ANIMATIONS

No matter how much memory we have, we all must face the fact that animations rarely last more than a few seconds. Some users have small video businesses and maybe an editing system, but lack the money for a dedicated frame controller with software. Well, if you own a hard drive you can overcome at least some of the constraints inherent in RAM. For example, first create an animation with Sculpt 4D. Make

it hundreds of frames long, with all kinds of spinning objects and swooping camera angles. But before you go to render it, choose the non-compression mode in Sculpt 4D (this is the opposite choice of choosing "Ram Animation" or "Anim-5").

Then change "Saves Images" to yes. This saves each frame directly to your hard disk as a picture, rather than compressing just the changes into a RAM animation.

Once you have all the single images saved on your hard drive, use a program such as Elan Performer to assemble it.

In Elan Performer, you attach each frame to a key—about 30 at a time (don't worry, Sculpt automatically numbers each frame in rendering). Once you have the first 30 loaded into memory, play your animation and record it. Then load in the second 30, and repeat the process. After all the segments have been dumped onto tape they can easily be edited together.

The resulting animations can be MINUTES in length, and you can even use thousands of colors with higher resolutions, as long as you only work with sections of your animation in memory at one time. While attaching each picture to a key is at first rather tedious, with Elan Performer you can save the entire key set-up as an "Environment." And as long as you always use the same animation file name for your "take" with Sculpt-Animate 4D, the key environments can be used over and over. For those interested, Elan Performer is an excellent slideshow/frame presentation program that allows easy manipulation of graphics and animations.

Experiment with the above techniques, and your animations will become smoother, faster, longer, and more realistic. While these tips cannot totally free you of limitations in animating, they are certainly cheaper to implement than having to purchase more RAM boards and extra processors. In fact, they are so inexpensive and easy to master—you can put them to use right now!

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AC Disks

Source code and executable programs included
for all articles printed in *Amazing Computing*.



AC V3.8 and AC V3.9

Gels in MultiForth Parts I & II: Learn how to use Gels in MultiForth. Author: John Bushakra

FFP & IEEE: An Example of using FFP & IEEE math routines in Modula-2. Author: Steve Faliszewski

CAI: A complete Computer Aided Instruction program with editor written in AmigaBASIC. Author: Paul Castonguay

Tumbler Tots: A complete game written in Assembly language. Save the falling babies in this game. Author: David Ashley

VGad: A gadget editor that allows you to easily create gadgets. The program then generates C code that you can use in your own programs. Author: Stephen Vermeulen

MenuEd: A menu editor that allows you to easily create menus. The program then generates C code that you can use in your own programs. Author: David Pehrson

Bspread: A powerful spreadsheet program written in AmigaBASIC. Author: Bryan Catley



AC V4.3 and AC V4.4

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MultiSort: Sorting and intertask communication in Modula-2. Author: Steve Faliszewski

Double Playfield: Shows how to use dual playfields in AmigaBASIC. Author: Robert D'Asto

'881 Math Part I: Programming the 68881 math coprocessor chip in C. Author: Read Predmore

Args: Passing arguments to an AmigaBASIC program from the CLI. Author: Brian Zupke



AC V4.5 and AC V4.6

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Insta Sound: Tapping the Amiga's sound from AmigaBASIC using the Wave command. Author: Greg Stringfellow

MIDI Out: A MIDI program that you can expand upon. Written in C. Author: Br. Seraphim Winslow

Diskless Compiler: Setting up a compiler environment that doesn't need floppies. Author: Chuck Raudonis



AC V4.7 and AC V4.8

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Analog Joysticks: The code for using analog joysticks on the Amiga. Written in C. Author: David Kinzer

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Better String Gadgets: How to tap the power of string gadgets in C. Author: John Bushakra

On Your Alert: Using the system's alerts from AmigaBASIC. Author: John F. Wiederhirn

Batch Files: Executing batch files from AmigaBASIC. Author: Mark Aydelotte

C Notes: The beginning of a utility program in C. Author: Stephen Kemp



AC V4.9

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Cell Animation: Using cell animation in Modula-2. Author: Nicholas Cirasella

Improving Graphics: Improve the way your program looks no matter what screen it opens on. In C. Author: Richard Martin

Gels in MultiForth Part 3: The third and final part on using Gels in Forth. Author: John Bushakra

C Notes V4.9: Look at a simple utility program in C. Author: Stephen Kemp

1D_Cells: A program that simulates a one-dimensional cellular automata. Author: Russell Wallace

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Most: Text file reader that will display one or more files. The program will automatically format the text for you. Author: Russell Wallace

Terminator: A virus protection program. Author: Russell Wallace



AC V4.10 and AC V4.11

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AC V4.12 & AC V5.1

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AC V5.2 & 5.3

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AC V5.4 & AC 5.5

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AC V5.6 & V5.7

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AC V5.8

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C Notes From the C Group: Functions supporting doubly-linked lists. Author: Stephen Kemp

APL and the Amiga: Programming APL on the Amiga. Author: Henry T. Lippert, Ed.D.

To be
continued...

day in the life of **Amigas In Television**

by Frank McMahon

FOR YEARS NOW WE'VE HEARD HOW THE AMIGA IS BEING USED IN VARIOUS network and cable television situations, but little is told about what professionals in this field actually DO with their Amigas. Until now, that is, because you're about to see exactly how five Amigas are put to work daily at Westerly Cable Television (a division of Colony Communications, Inc.) in Westerly, Rhode Island.

When I started as production supervisor there three years ago I had already used the Amiga in a wide variety of productions. I truly hoped that in a supervisory role at a television station I could incorporate Amigas into various stages of production and development. During the past three years that is what I have done, and now Amigas play a major role in the daily job of producing television programs and running various cable channels.

12:00 NOON—ON-AIR AMIGA BULLETIN BOARD

It's noontime, and the production people are just coming in. With cable, most of the programming and shoots take place in the late afternoon and at night. Sometimes it's a rough job, but at least you do get to sleep in late.

One of the first things that gets checked is our on-air Amiga bulletin board. Up for almost two years now, this Amiga 500 is equipped with a ProGEN genlock and is plugged into "WCTV", our local public access channel 13. We broadcast a mixture of public access or "public-produced" programming, in addition to local origination shows produced by Westerly Cable staffers, on this channel.

When we're not on the air, the Amiga 500 rotates a mixture of local announcements, programming schedules, paid ads, and upcoming events. While most local cable stations show pages upon pages of two-color text during the day,

we're able to include everything from digital frames taken from upcoming shows, to original graphics promoting the station, to spinning animations of our station's logo. A big part of what we do is working with the community and highlighting local events and fund raisers. Local chapters of organizations are able to come to us with a sketched-out ad and we're able to set it in motion. Recently, a group handling a United Way drive wanted to be able to keep people in the community updated as to how much money was being raised on a weekly basis. At the same time, they wanted to continue to promote the fact that they had a specific goal to reach. The drive organizers gave us a black-and-white logo, and we came up with 3-D object created from their print, which was used in the televised ad. We also created a thermometer graph in wire frame mode to depict how much money had been raised, and how much more was needed to reach the goal.

Both objects were ray traced with shadows and reflections, and an ad was created that ran on our local channel for several months. With Photon Paint we were able to change the total on the thermometer every week.

The transformations that occurred when we went on-line were received with an excellent response. Our channel (when scheduled programming wasn't on) was no longer just taking up space, it had become a colorful splash that grabbed the viewer's attention and got them to NOT immediately

click past it. We tried different slideshow programs, everything from TV Show to Lights, Camera, Action and finally settled on "Elan Performer" for our on-air rotation. While the other programs are able to do different wipes and fancy dissolves, Performer is so easy to use and user friendly that for the past year we haven't used any other program.

1:10 PM—DIGITIZING STATION

Along with the various shoots and editing going on, our second Amiga is busy back in the technical area. The set-up there includes an Amiga 500, Progressive Peripherals' FrameGrabber, and a 3/4-inch Sony 9800 deck. Chiara, one of our production assistants, is busy creating the new on-air pages.

On this day, we have to create a paid ad, as well as update program listings for the coming week. Our client has given us his logo (on a business card) as well as a photograph of some guitars (he owns a music store). The logo and photos are shot with our studio cameras and put on 3/4-inch SP format tape. With our 9800 we are able to scan through the tape and pick out shots (close-up, wide, crop, etc.) that will be the best to digitize. Since FrameGrabber shows you the live video running through the computer screen, we quickly get a good preview of how it will look on-air.

When it looks good, it's digitized. We usually try to grab frames in 64 or 4096 colors to produce the most accurate colors and shading. Most of the time, we can get by with 64 colors (or less) but sometimes we need to use the HAM mode.

Almost all of our work is created in DeluxePaint III. It allows us much creative freedom, the speed, and quality we need to get things on-air in a timely manner. It is, quite simply, one of the most important graphic programs for ANY computer.

If we need to work in HAM mode, we always pick up Photon Paint 2.0. It's a dazzling array of features and ease of use helps out with digital pictures. We also use Digi-Paint III on some occasions, but its inability to work in real-time overscan limits its use in many professional applications. However, its sheer speed can't be ignored—and isn't—if there is an approaching deadline.

Our off-line Amiga set-up is also used to update our local event and programming pages. Most local cable channels receive stacks of mail weekly, most of it press releases announcing everything from major city events and political meetings to local school plays and Elks club meetings. We do our best to keep up by dedicating "local event" pages in our rotation every week. The events pages consist of digitized or drawn backdrops (fall leaves, winter mountains, etc.) with square borders around outer edges. We use overscan on all pages, and add the border to keep all text within a "safe" viewing area, so it doesn't get cut off on some TVs. We then darken the background to half-bright and type in the events in a bright color or white. It gives our events pages a seasonal feel while making them always easy to read.

Also going up on this day is a graphic to promote an upcoming film festival the station is holding. To do this, we create our station logo in DeluxePaint III and then convert it to a 3-D object using DigiWorks 3D. This allows us to use a ray-tracing program such as Sculpt-Animate 4D to not only create a realistic ad, but also include our fully-shaded 3-D station logo. The added depth has great impact for those viewers who are used to seeing similar graphics on the major networks.

4:40 PM—THE WORKHORSE AMIGA

As I sit down to begin editing I turn on the editor itself, the monitors, the decks, all the video hardware, and lastly, our studio control room Amiga. Our most-used Amiga, in fact, is the 2500/30 that sits right next to our editor—it's used in some way or another on EVERY production. Our 2500 is equipped with 5 megs of 32-bit RAM, a SuperGen genlock, 1 hard drive and two floppies, Mimetics' 24-bit FrameBuffer board, and Mimetics' 24-bit FrameGrabber board. Graphics are a big part of every show we produce.

When you get right down to it, quality of graphics is one of the major differences between network and local cable

programming. You can be watching an interview and not know whether it has been produced locally or by a network (much of our equipment is actually the same). However, once a "super" (person's name genlocked in) is pulled up, or a title screen is faded into another, you usually know which you are watching. The networks put as much effort into their on-air graphics as they put into their shows.

Armed with our Amiga we are able to take every show we produce and make it

and animations with the Mimetics FrameBuffer using Sculpt-Animate 4D or Turbo Silver. While animations at this point need to be single frame recorded in 24-bit mode, it still allows us to achieve what only five years ago would have been inconceivable on any home computer.

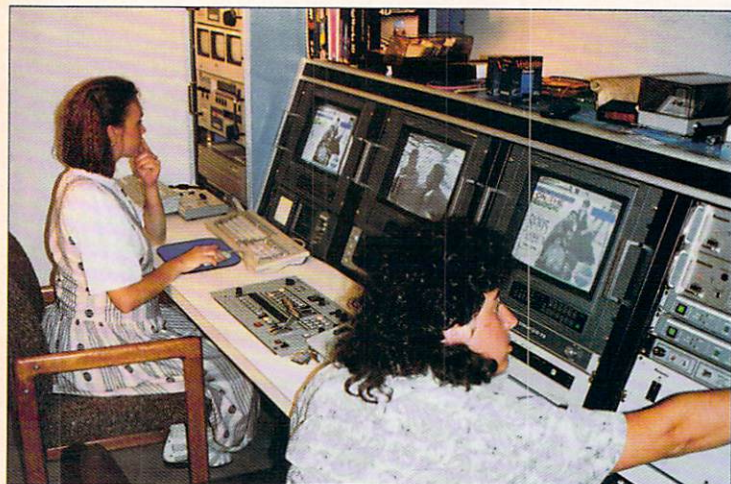
On this day I must edit our music video show. On our hard disk I store all the generic titles and logos needed. When a music video is edited in, I pull up our standard music video title animation. It's a



look professional with dazzling graphics. While most of our titles and "supers" are created with DeluxePaint III, I also incorporate three-dimensional graphics into the shows. Ray-traced images and animations are becoming more the norm with each passing TV season. We are able to produce high-resolution 24-bit images

long, colored bar that slides in as our logo slowly "assembles" itself from four different sections in the lower right corner. All I need to enter is the artist's name and the song title.

After it is displayed I usually make it spin off in very fast motion. One thing we learned pretty quickly was that certain col-



top: WCTV Production Assistants Chiara Sherwood and Maria Fusaro work the controls.
bottom: Author under the hot lights of prime-time cable TV.

ors and textures work going onto video, and some don't. We try to avoid using groups of high contrast colors. For the music show I usually put drop shadows on all titles and logos that are genlocked in over the videos. With so much action, the titles may get lost in the shuffle. Most news and network shows do the same thing; that is, use a light colored font or logo with a dark black shadow. That way, if the video is brightly lit, or dark and moody, the graphics will still show up quite clearly. We've also learned not to get too busy when it comes to Amiga graphics. It's easy to design all kinds of shapes and use the thousands of colors available, but in the end the simplest graphics usually stand out. Most cable networks (like HBO and Showtime) live by the same rules. Even MTV has stuck with the same basic 3-letter logo over time. What we do, too, is design

ing as you work on a specific project. After converting it to different resolutions I settle on hi-res 16 color. With the dithering technique, the FrameBuffer's software provides, it actually appears to be as many colors as, say, half-bright or HAM mode, but with added resolution.

Using DeluxePaint III's ANIM features, I construct several short animations of the various pictures "flying by", making use of the perspective feature. I always try to add a reflective glow moving across my graphics, giving them an added 3-D feel. Creation of this quick flash of light is pretty simple, using the move register. The animations are genlocked over a videotape which contains dithered gradient fills created with the FrameBuffer, using bright blue to deep red spreads rendered in 16 million colors. Once that is dumped to tape, I am

a simple logo and stick with it—put it in the shows as much as possible, thereby gaining exposure and recognition in the eyes of our viewers.

After finishing work on this show, I add the closing credits. This time, I'll try something different. I've grabbed several different frames of the show with our Mimetics FrameBuffer. One unique thing that this digitizer does is capture frames in 16 million colors. Once the picture is stored in the FrameBuffer, I can convert it to any Amiga resolution I want. I save the image to RAM disk whenever I can, because it's so much faster loading and sav-

ready to include the animated end title sequence, which will be overlaid onto the flying freeze frames. With our SuperGen genlock I also give it a slight blue tint by raising the background slider for an added effect.

I realize that this process leads to a few generations of copies, but luckily, by using 3/4 -inch tape in the new SP mode, the signal stays strong and brilliant. Laying effects upon effects is very easy, and the end result looks excellent. It's also sometimes quicker than creating an "all-in-one animation", and working in cable TV you do face deadlines. On occasion, we will still be editing and adding the final Amiga credit sequence with airtime just 3 minutes away! Of course, we always have to leave an extra minute to rewind the tape!

7:00 PM—THE AMIGA PAY-PER-VIEW CHANNEL

After a quick dinner, it's time to update our pay-per-view channel. It's not located in our studio, but rather, in a separate building called our "Head End". This is the main part of any cable system. While our studio outputs our local channel, the Head End is where all channels are combined before they are sent out to subscribers. It's where all the main equipment is, including several satellite dishes. We currently have a dedicated Amiga 500 that runs a separate channel (from our local one) that promotes our upcoming events as well as letting customers know of specials such as a free Disney preview or a half-price special on HBO. All the ads are created back at our digitizing station and are mostly digitized pages. All major networks send us full-color ad slicks which we usually redesign before they are aired. Once again, we try to use 4096 colors whenever we can because the ads usually have a wide variety of color and we want them to look their best. The channel goes out to every subscriber and is one of our main promotional tools. Reaching everyone who receives cable 24 hours a day with full-color ads (and sometimes animated logos) is something none of the other media can match. If we have a pay channel special, every household receiving cable gets to see the ad.

The rotation needs to be changed, so we use Elan Performer to move various ads around. Right now there are only a few ads, so Elan loads them all into RAM and rotates them from the RAM disk, which saves wear

What's Superb Video Without Great Audio?

FOR THOSE WHO THINK THAT USE of the Amiga in television ends with video titling and animation, think again. The Amiga's audio capabilities are as impressive as the video end. We've used the internal sounds on many productions, from short audio jingles to full-blown songs. For example, we recently needed audio for a ticking clock. After searching through several disks full of digital sounds and sound effects, we finally referred back to Broderbund's Fantavision. I remembered that it included a demo animation of a ticking clock, and that sound sample worked like a charm.

In addition to creating sound effects, we've used several programs over the years—including Sonix, M, and Deluxe Music Construction Set—to produce lead-in and musical segues. In recent months, I've started experimenting with HYPERCHORD, which allows the user to create complex riffs quickly and easily. Our mainstay, though, is Blue Ribbon Bakery's excellent Bars&Pipes. Being a musician I find this package to be the most natural and logical extension in music creation. Ease of use, plus the inclusion of many features and excellent support makes this a powerhouse of a program—the DeluxePaint of the Amiga music world. Our monthly soap opera/adventure series (incidentally, every episode is written on an Amiga using the word processor Pen Pal) that we produce was scored with bits and pieces of various records from the start. But last month was the first episode to feature a full original score which I composed entirely on an Amiga 2000 using Bars&Pipes and a Kawai K-4 keyboard. A great television video production is nothing without great audio and once again...only Amiga makes it possible!—F.M.

and tear on the internal disk drives. By the way, all our on-air Amigas have been running non-stop on the air for as long as two years. Commodore has certainly produced a computer that can stand up to heavy use, so don't feel bad next time you have to leave a ray-trace going overnight!

7:45 PM—THE PREVUE GUIDE

Our Prevue Guide Amiga is also at the Head End, and we need to add a graphic in its rotation to promote an upcoming pay-per-view concert. Even given the many ways we use Amigas at our particular station, the Prevue Guide is a source of added inspiration in terms of what can be

done in cable TV with these amazing machines. The Prevue Guide is a national channel that is completely controlled by an Amiga in each system that subscribes to it. In fact, the Amiga that runs our Prevue Guide was installed several years ago, has been here longer than any of the others, and is still going strong.

If you receive cable and the Prevue Guide is on your system, you're not alone. Millions of viewers all across the nation tune into the Amiga-run service on a daily basis. For those that are unfamiliar with it, the basic screen is set up in 3 parts. The bottom part is made up of local listings that scroll continuously, telling viewers what is scheduled to appear on every channel on their system, kind of like a video TV Guide. The listings are system specific for every city; several times a day, the information is downloaded to the Amiga from Prevue Guide's main office and saved onto disk.

The top half is split between promotional commercials for pay services (genlocked in from satellite!) and Amiga graphics, which the user can change or alter. Adding the concert ad is as simple as inserting the disk into the external drive and hitting reset to inform the computer that there is a new picture in the rotation. This channel also airs 24 hours a day and is constantly updated automatically. Since this company has been in business for several years now, most of the systems (including ours) are run on Amiga 1000s. That's right, mil-

lions of cable viewers everyday depend on and watch the classic 1000s.

8:30 PM—ONE LAST GRAPHIC

Back at the studio, a studio production is taking place. Another way that the Amiga is able to add life to a program is to store up graphics and fade them up at just the right time. Studio productions, especially news programs, benefit by having animations and over-the-shoulder graphics genlocked over in real-time. Once again we use Elan Performer or one of several slide show programs, and assign each graphic to a key. Once it's time, we just hit the key and slide in the graphic. Some shows are not edited and take place in real-time, and with the memory storage and speed of our studio 2500/30, we are able to have everything set up ahead of time.

At the digitizing station, work is nearing completion on an ad to promote our



The Amiga plays a key role in all facets of television production at Westerly Cable.



"Television Programs"

WHILE WE'VE TRIED NUMEROUS PROGRAMS OVER THE YEARS, THERE are just a few that we've stuck with that seem to generate the most use. DeluxePaint III and Sculpt-Animate 4D head the list. While there are other paint programs that have more effects or colors, DeluxePaint is easy to use, powerful, and having animation built in comes in very handy. Sculpt-Animate 4D also has built in animation and produces excellent logos, titles, and designs (especially when used with our 24-bit framebuffer board). While Turbo Silver is certainly packed with more features (including textures and better lighting control), Sculpt tends to be a bit more user friendly and lets us create basic ray-traced images quickly. While Photon Paint II and Digi-Paint III are used every week, our underdog is DeluxePhotoLab. For image manipulation of digital pictures, it gets a lot of use at the studio. We also use Animagic from Oxxi/Aegis to create transitions and DVE (Digital Video Effects - page spinning, shatter, burst-dissolves, etc.) effects. It is a little difficult to use and certainly needs several megabytes to create the kind of effects it promotes, but the options and dazzling effects this program creates cannot be done by any other Amiga program. We have always been on the look out for a programmable Amiga DVE program and this one has been the best one we've used so far. We also use a LOT of fonts and font programs. Our favorites continue to be the KaraFont Series. These color fonts add a professional touch to any production and are one of the few font series we've seen that are truly built for television.—F.M.

public access class. For those unfamiliar with public access, most cable stations provide a local channel for the public to use. And cable systems also provide training as well as studio and portable television equipment, so that anyone can produce their own cable show. We do this as a public service to our residents and we try to promote it as best we can. A week earlier we held a studio class and with one of our portable cameras, we got all kinds of shots. People breaking down equipment, learning editing, etc. Now we are taking the footage and running it through our digitizer ... looking for the best shots. Once we have logged and selected the best ones, they are grabbed in HAM mode. After shrinking them down and doing a little bit of remapping colors, we assembled an ad to run on our local channel. The ad tells about the course and features the best "shots" from an actual access class. We finish it just a little before 9:00pm and are able to get it on the air before the staff heads home.

9:00 PM—QUITTING TIME

After a long day it may seem that we've spent it entirely on the Amigas—on some days, that's kind of true. The Amiga is certainly the computer best suited for use in any visual medium. And given its low price, it can easily be included in most stations' budgets. At Westerly Cable, we've managed to incorporate it into almost all elements of our daily process of creating programs and running local channels.

But we don't intend to stop there. We eventually hope to use Amigas to: keep track of our equipment sign-out and programming logs. Maintain databases of castings for various shows and productions, with digital pictures and resumes for each stored on hard disk. Create informational programs to help train new access people and keep them up-to-date with new equipment and technology. Use the Amiga in place of more expensive dedicated equipment, such as teleprompter and music storage. New software allows our Amigas to be used as edit controllers for our 3/4 A/B roll system.

The possibilities are endless, and as our studio grows, so will the potential uses for our Amigas. I can't imagine running a studio now without them, and as we progress into the future, one thing is certain; Amigas are helping us make GREAT television at Westerly Cable.

•AC•

left: Some of the works produced and utilized by Westerly Cable.

upgrades

fixes

updates

new
releases

bug bytes

by John Steiner

THIS MONTH'S COLUMN IS devoted entirely to reader mail. In the last few months, the volume of mail has increased tremendously. It's gratifying to see so many Amiga owners coming to the aid of one another in the pages of AC. The first several letters are responses to requests for information published in several recent Bug Bytes reports.

IN AC V5.5, I REQUESTED, ON behalf of Mike Luther of Laurel Bay, SC, information regarding a patch for the Transformer. Three people wrote to assist: Kenneth Kawamura of East Lansing, MI, Paul Cimino of King of Prussia, PA, and Lowell Zabel of Punta Gorda, FL. Kenneth and Paul both sent disks containing utilities that will patch the Kickstart 1.1 version Transformer to version 1.2. I have forwarded copies of these disks to Mr. Luther.

Mr. Zabel also reports that the patched Transformer doesn't work on all Amiga 2000s. He believes this is due to the Fatter Agnus chip, which allows 1MB of chip RAM. I can verify this to the extent that when I tried to run the patched Transformer on my own 2000 with Fatter Agnus, it wouldn't work.

Lowell pointed out that this version of the Transformer doesn't seem to work with the more recent versions of MS-DOS. He uses a Toshiba version 2.1 which operates reliably. He has tried version 3.1 with no success. I would add to this that he might try several brands of version 3.x, as there are minor differences between versions of MS-DOS as released by different computer manufacturers. Or try a

release version directly from Microsoft; they are designed to operate on any IBM-compatible system.

Paul also reports that the Transformer won't run on early Amiga 2000 systems equipped with the "Cherry" brand keyboards (Cherry brand keyboards have very small function keys). These keyboards have a timing problem that causes the Transformer and several other programs to fail to operate properly. Paul reports of a fix for this problem. My personal recollection of this problem (I originally had a Cherry keyboard on my first A2000) was of a repair that was made at my local Amiga dealer's service department.

IN AC V5.6, I REPORTED ON A problem with Preferred Technologies' M2Sprint Modula-2 as presented by Mr. Tom Gist. I received a follow-up letter from Mr. Gist that included copies of his correspondence with Mr. Leon Frenkel. In addition, I received letters from two readers who both dispute the bug reported by Mr. Gist.

Elliott Jacobs of Ormond Beach, FL writes in part, "It is true that version 1.0 had the bug that you reported in the June 1990 issue of *[Amazing Computing]*. However, the bug was corrected when I received version 1.1 from M2S in Summer 1989.

"I typed in the code fragment you printed...and the output I obtained was: x := .05000 which is perfectly correct. It seems to me that you are incorrectly reporting a 1.0 bug as a bug in the current version. This leaves your readers with the misimpression that M2Sprint Modula-2 is still a crippled product."

Bob Lockie of Burlington, Ontario, Canada also tested the problem with version 1.11 of the compiler. He used the following code:

```
MODULE Test;

FROM InOut IMPORT WriteString, WriteLn
FROM RealInOut IMPORT WriteReal

VAR x : REAL;
BEGIN
  x := 0.05;
  WriteString (x := " ");
  WriteReal (x, 15); WriteLn;
END Test.
```

He compiled and linked it from within the editor with all compile and link options turned on. He also linked it with the RTAR.lnk RunTime module. When the program was run it produced:

```
x := .05000
```

BACK TO AC V5.5, IN WHICH I also reported that Glen Cyrille wished to get in contact with Software Terminal of Ft. Worth, TX, as he was not able to reach them via phone. David Bilyea of Software Terminal wrote to let us know that the Software Terminal is still alive and supporting Intruder Alert. He comments that they did have a hassle with the phone service, and have not been listed in the phone directories since December, 1989. They do have a phone, however, and their correct number is listed below. Long-distance callers should be aware that their phone is frequently answered by machine.

David also responded to Glen's bug report. "When the program was written, we were not aware of any areas which used phone numbers of less than 7 digits...His

problem can be corrected by the simple expedient of including enough null characters in his dialing string to make the numbers equal seven digits." *Software Terminal*, P.O. Box 123225, Fort Worth, TX 76121, (817) 737-3297.

VERNE BOHLENDER OF CHESLEY, Ontario, Canada wrote with confirmation and workarounds for some MaxiPlan bugs. By the way, I've gotten so much mail regarding MaxiPlan, I am unable to comment on each letter. Most have been of a similar tone to the ones previously reported. Hopefully these workarounds will help readers make more productive use of MaxiPlan versions from Intuitive Technologies. Mr. Bohlender uses Plan/It, a variant of MaxiPlan that was distributed by B.E.S.T. Software.

"To freeze columns and rows you must first block the row you want, starting at the column you want to be frozen also and choose 'both' in order to make it work," he says. Mr. Bohlender comments that he has no trouble using this procedure, and he uses it often. Formula replication operates in an identical manner—define the block and highlight it to the right and down. He reports that the easy sort works as called for.

He was not able to change printers on the Plan/It disk (he is unclear as to why, but I would imagine that Preferences was not included on their original distribution disk). He simply copied his SuperPlan disk, and modified the start-up sequence file to include STACK 13000, CD DF1: and RUN Plan/It.

He then copied only the minimum necessary files to a copy of Plan/It, and is now able to set Preferences to his desired printer.

Verne recommends SuperPlan for spreadsheet users. He comments that it has a hard learning curve, but gets easier as you work with it.

WHILE ON THE TOPIC OF spreadsheets, I received a letter from Michal Todorovic of Goleta, CA. Michal is the author of The Advantage, Gold Disk's spreadsheet release. In AC V5.5, I reported a problem with the program regarding improper handling of numeric precision. Michal enclosed an advanced gamma version of 1.1 Advantage. Gold Disk will probably have this upgrade available by the time you read this. No details on their handling of the upgrade were provided; therefore, if you are having problems with your copy of The Advantage and want details regarding their upgrade policy, call them directly.

The changes provided in the 1.1 release include:

- Internal storage of numbers with 18-digit precision, and display of up to 13 digits.
- Support for 68881 and 68882 for increased speed when used with these math coprocessor chips.
- Improvement in recalculation speed from 5% to 40% on a stock A2000.
- A change in the file format speeds up saves and loads by more than 60% in some cases. Floppy users can expect an average 30% speed increase. 1.0 files are still supported.
- Lotus 1-2-3 support has been significantly enhanced, with the addition of 36 1-2-3 functions that were not supported by Advantage 1.0.
- SmallAdv has been replaced by Calc and Graph. Calc is The Advantage without the graphing module. Graphic is The Advantage without the spreadsheet. Both programs are for 512K users.

Support for international characters is now available. *Gold Disk, Inc., P.O. Box 789, Streetsville, Mississauga Ontario Canada L5M 2C2, (416) 828-0913, (800) 387-8192, FAX (416) 828-7754, Tech Support (416) 828-5636. Inquiry #205*

RICHARD HOWE, OF APPLIED RESEARCH Kernel, Amiga specialists in the United Kingdom, wrote to report several bugs and upgrades.

"1. Gold Disk's Pagesetter II manual states that 'The CacheEdit program is found in the CGFonts directory on the PSUtil disk. Run the program from the Workbench or CLI as usual.' Unfortunately current versions have no CGFonts drawer icon in the root directory. This means that the cache editor is not available from the Workbench as stated. This can be fixed by creating a new drawer icon in the root directory and calling it CGFonts.

"2. Some versions of Gold Disk's Advantage and the Disk Company's Home Office Kit's Info File database are unduplicatable from the Workbench because the info default tool is incorrectly given as 'DiskCopy' instead of SYS:System/Diskcopy. Highlight the disk's icon and select Info from the Workbench menu. Change the default tool as indicated above and select Save.

"3. The MaxiPlan 1.9 spreadsheet as released in the Disk Company's Home Office Kit exhibits a display bug where the column reference letters disappear altogether, or are garbled. This problem

does not appear on all Amiga systems, and seems to be related to the Fatter Agnus or other late model Amiga system chips.

"4. Users of Arena Accounts should upgrade to version 1.04 or higher if possible as some early versions suffered from some imbalance and rounding problems.

"5. We have just spoken to a customer of Digita's Cashbook Combination version 3.5. He has reported a bug where journal entries are not entered onto the audit trail even though they are taken into account in the Trial Balance. We haven't had time to test this, but the customer is an accountant."

DAVE MANVEL OF WOODBRIDGE, VA reports a problem with DeluxePrint II regarding font loading. It appears that the program doesn't release fast RAM that is used to store fonts. If no fonts are used, then no memory is lost upon closing the program. He provides an example showing that 214K of memory was lost after loading in 10 fonts. The only way he knows to free up the lost memory is to reboot the computer. If anyone has a workaround to this, let us know, and we'll pass it along.

ELLEN KAYE OF WALLINGFORD, CT writes with a problem she is having with DeluxeVideo III and her new 2500/30 with 2091 hard drive controller. She had been an enthusiastic user of DVideo III for a few weeks prior to getting the 2500 with no problems.

She writes that "...on the 2500, I cannot pull down a backdrop track without the program going into instant and irretrievable software failure. A backdrop track allows the user to configure the screen sizes and resolutions of the scene in the video. It is a necessary track for many effects. A call to Electronic Arts revealed that they were aware of the problem and that Commodore was fixing it by replacing the software ROMs for the controller from Version 5.92 to 6.1. I had a one-week-old machine that required a non-warranted fix in order to run DVideo. The dealer replaced the chips (2) and charged me \$45 for the chips and labor, since Commodore maintained that it was NOT a problem with their products, but they were helping out EA who wrote the software to be incompatible with the 2091 controller and out of Commodore's specs. I was mildly upset that I had to pay the extra money to get the program to work. I was really upset when I discovered that the software revision has not changed a thing and I still cannot run DVideo without getting failure when attempting to use a backdrop track.

By the way, the program works fine in the 68000 mode...and it will not run properly when booted from floppy instead of the hard drive in the 68030 mode either.

"The technicians at Commodore seem surprised that the revision has not corrected the problem. They suggested to the dealer that they could start pulling out different boards on my machine to see if the motherboard, 68030 board, etc. are faulty...I have an extensive graphics and music software collection and am not experiencing any problems whatsoever with [anything but DVideo III]." Ellen also states that Electronic Arts told her the problem only occurs on the 2500/30 and not with any GVP 68030 systems.

If you are having problems with DVideo and your 2500, pass it along, and also pass along any information you may have about correcting those problems. I will report on your findings here.

JERRY RUBEMEYER OF ATWATER, CA reports a bug with the World Atlas from Centaur Software. He was trying to get the program to work with his hard disk, a GVP controller, Quantum 40 combination. "With the recent release of version 2.0 World Atlas, I was again disappointed after a few calls back and forth with the friendly folks at Centaur to find that the program would not work from the Workbench, only from the CLI."

He suggested a temporary fix that they could tell others about until they can fix the problem. Use a text editor to create a script file, the file can have echo commands for messages, but it must have at least one line: World Atlas/WA. Highlight the icon that was created for this text file (or make or copy a project icon if your text editor doesn't create icons) and select the Info command from the Workbench menu. Change the default tool to C:Iconx. For this fix to work, you must be sure the program Iconx is in the C: directory of your boot disk.

By the way, if anyone still has versions 1.x of World Atlas, you can get the version 2.0 upgrade by sending in your original two-disk set. It will be replaced with the four-disk set at no charge, according to Mr. Rubemeyer. *Centaur Software Inc., Box 4400, Redondo Beach, CA 90278, (213) 542-2226, FAX (213) 542-9998. Inquiry #201*

PERRY GRETTON OF BEROWRA Heights, NSW Australia writes that the AWRITE.EXE program supplied with the Bridgeboard does not write properly to FastFileSystem partitions when using the 2090 controller card. The workaround is to

write the file to either a floppy disk, RAM disk or RAD: and then copy the file from AmigaDOS to the FastFile partition. AREAD.EXE seems to work properly from FastFile partitions, strangely enough. Perry wrote that the problem is confined to the 2090 controller; according to Commodore technical support, neither the 2090A nor the 2091 exhibit the problem.

FINALLY, ON THE TOPIC OF THE Bridgeboard, I've received letters from Dr. David Black of Auckland, New Zealand, and Jacques Chatenay of LeNoire City, TN.

Dr. Black is having a problem with the arrow keys, which initially worked properly, while the numeric keypad is in the non-numlock mode. Once the numlock key has been pressed and toggled off, the arrow keys return the number equivalent keys of their counterparts on the keypad (2, 4, 6, and 8). No combination of keys will correct this. He has noticed this problem when using Quattro, an IBM-based spreadsheet, and also in DOS.

He also reports that Quattro can be improved in speed by using a virtual MS-DOS disk in Amiga RAM. When using the simulated MS-DOS disk, disk intensive

programs like Quattro run too slowly to be efficient. By transferring the program to a virtual RAM disk on the Amiga side, performance is improved noticeably.

Mr. Chatenay reports that the AMouse program operates the Amiga mouse intermittently when using Windows and Excel on a 2286 Bridgecard. He would like to find a fix to this problem without having to resort to buying an MS-DOS-based bus mouse to use on the IBM side. If anyone else has found that this is a problem, or has found a solution, please let me know. I will pass the information along.

That's all for this month. If you have any workarounds or bugs to report, or if you know of any upgrades to commercial software, you may notify me by writing to:

John Steiner
c/o Amazing Computing
P.O. Box 869
Fall River, MA 02722-9970

or leave EMail to Publisher on People Link

•AC•

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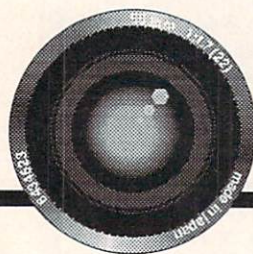
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SNAPSHOT

by R. Bradley Andrews

NORTH&SOUTH

The Yankees and Confederates are once again at odds in Data East's latest release, **NORTH&SOUTH**, a strategic game set in Civil War America.

The game is played on a map of the Eastern United States, with each state being a separate movement zone. While many zones begin the game as neutral, either side can "capture" any zone by entering it with an army. The goal of this game is to convert all the states over to your side. But in trying to achieve this, you are naturally drawn into direct conflict with your opponent's armies.

While a strategic overview is necessary, arcade sequences are used to resolve many of the actions along the way. Enemy armies can fight it out on an animated battlefield, trains can be hijacked (by making it to the engine), and forts can be stormed. While these animated sequences all seem clever at the start, they are repeated to the point of tedium.

The battle sequence is extremely difficult to master. The problem is that all of your forces—cavalry, foot soldiers, and cannons—must be moved at the same time. It is a real challenge to get all three working simultaneously (though the computer does it rather well!).

The graphics are very good, so the game does have some value. Digitized sounds complement game play, and help get you into the feel of this conflict. Many game options can be adjusted. The start of each new year sees the opposing sides

with different strength armies and different states under their respective control.

Additionally, the two sides can be set to different skill levels, allowing players of unequal ability to play against each other on equal footing. The computer can also play either side at any skill level.

The game comes with a brief manual, and some of the play mechanics are initially a bit hard to grasp, but after a few plays most things become fairly clear. **NORTH&SOUTH** will particularly interest those who enjoy strategic-action games with plots that are resolved in arcade sequences. Be warned: this game may not hold up to repeated play, since it turns on just three basic sequences. While it can be played without the arcade sequences, it then becomes a fairly boring and relatively simple war-game.

BUDOKAN, THE MARTIAL SPIRIT

Next on the list this month is **Budokan**, a recent release from Electronic Arts. As you might have guessed, the game focuses on martial arts.

This game requires you to study the Japanese/Okinawan martial arts of Karate, Kendo, Nunchaku, and Bo (Bostick). After honing your skills in the practice arena against sparring partners of varying skill levels, you are ready for the real challenge posed by twelve expert opponents in the game's major tournament.

Each of the four martial arts has its own unique moves, tech-

niques, and on-screen action. Some involve the use of special weapons, while others involve only the human body, put to use with similar deadly results.

But action is not everything. The paragon martial artist must carefully balance periods of action with periods of rest, storing up inner energy to provide necessary power for his next attack. You cannot wait long; a successful blow by your opponent will cut the amount of your stored energy in half.

Either the keyboard or a joystick can be used for control during play, though I found the keyboard to be a little more accurate in completing some of the more elaborate moves.

Actual game play itself starts off slowly, in that much preparation is required before you can face an opponent in the arena. Since each part of the game has its own set of moves, it takes a bit of time before one can make a decent performance in the tournament.

The game mirrors real martial arts in one notable way: those with the most patience are also most likely to do well, and advance through the ranks quickly.

AQUANAUT

Once again, the Earth has been invaded by aliens who plan to enslave all of humanity. Only you and your elite team of underwater divers stand in their way.

So begins **Aquanaut**, the latest release from Miles Computing, Inc. Billed as a strategy/arcade game, **Aquanaut** links three basic arcade

sequences together to form one united mission designed to overcome these alien invaders.

Stage One begins just outside the sensor range of the alien submarine. The water path is crowded with hostile mutant marine life that must either be destroyed or avoided. But all is not bad. Friendly dolphins swim harmlessly by, and mermaids can provide an additional life if they are not shot. But the most valuable things are the storage containers and air resupply points that have been dropped along the way. Once at the alien submarine, you must use a plasma mine (picked up on the way) to destroy the alien craft.

Stage Two takes place in the underground waterways opened by the explosion of the alien submarine. A previous team has dropped dynamite and other tools that can be used to blast open blocked passageways. But even here, mutant life forms have taken over. Whereas those in the previous level could be shot at and destroyed, many of these are immune to your fire, and must be carefully avoided.

Stage Three puts the player in the alien city itself; it is here that you can put a final end to this horrendous threat to Earth. The graphics and sound are both very sharp and add greatly to the feel of being underwater.

The joystick is used for control, with a few keys used to perform additional special actions. However, control is one of this game's main failings. Your on-screen character usually responds slowly, and

fairly awkwardly, to changes in direction. This can be overcome through practice, but it nonetheless remains something of a hindrance.

Aquanaut is also filled with many "gotcha's". Each section of the game is actually fairly short and I suppose the designers felt they had to add something challenging to extend playing time. Rather than being challenging, most of these decision points may initially seem like "brick walls" to all but the most skilled players. Others can probably overcome these "walls" after a number of plays.

Unfortunately, even fabulous graphics and sound cannot make up for a poor interface, and in this sense, Aquanaut falls far short of its potential.

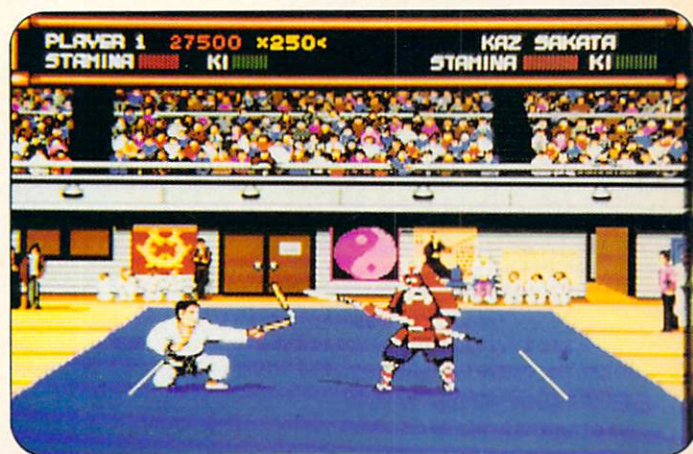
GREG NORMAN'S SHARK ATTACK: THE ULTIMATE GOLF SIMULATOR

One of the first games I wrote about in this column was a golf game, and given the fact that there have been several similar releases since, I pretty much thought that no new approach could be taken. Well, it seems like I thought wrong. Melbourne House, a division of Virgin/Mastertronic, has signed a big-name golfer and come out with a game of their own.

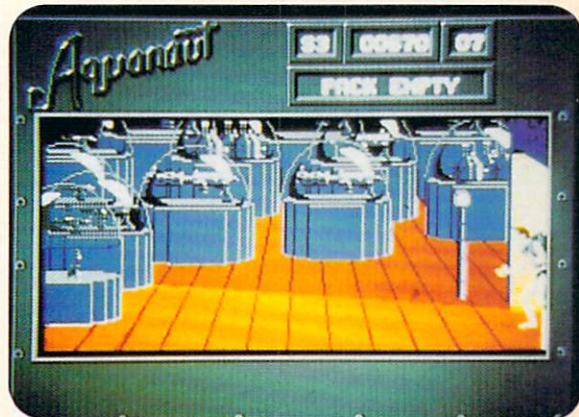
Greg Norman's Shark Attack adds a few new twists to this popular contest. The authors claim to have spent eight years in the creation of accurate 3-D models, including height and vegetation, of real courses and holes, plus accurately



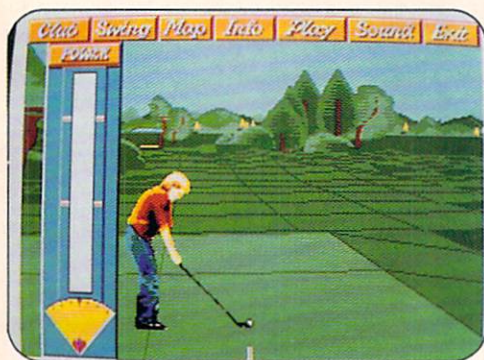
Data East's NORTH & SOUTH



Budokan from Electronic Arts



Miles Computing's Aquanaut



Greg Norman's Shark Attack
from Melbourne House

accurate shot off before the strength bar returns to the bottom, and the shot is taken for you. This is innovative, but it seems a bit more difficult to get off an accurate shot quickly, and it may be that the former method should have been used here.

Only two basic golf courses are included with the game, but given the large amount of flexibility and player control over individual game elements, this should not be too limiting.

Games can be played with either strokeplay or matchplay and from one to four players can compete as singles, in fourball, foursomes, or greensomes.

The user can also decide to activate accurate wind, weather, and ball effects, or to go for a much simpler game. A caddy—a feature that serves to recommend an appropriate club for each shot—can also be turned on or off.

Wind is treated in a unique way. While other games also include wind effects, its

impact in Shark Attack varies over time. It is important for a player to wait until the wind has died down a bit before taking a shot. Gusts or calm winds are apparent from a weather vane that spins on screen.

This game is interesting and I had a reasonably good time playing it. But I found the control problem to be a hassle. I also often found myself waiting until the wind died down totally before taking any shots (I should have just turned the wind off). A replay shot option is included, but the temptation is to use this feature to always get the perfect shot.

688 ATTACK SUB

Another release from Electronic Arts is 688 Attack Sub. The player assumes the role of captain of either a U.S. Los Angeles class or Soviet Alfa class nuclear-attack submarine. 688 looks in many ways like Silent Service (a WWII-era game) brought to the modern age. Play is centered around the control room, but the player can select any of the ship's different stations—weapons control, periscope room, etc.—from which to control various aspects of the ship's performance.

Modern radar and sonar are very sophisticated, and the successful captain will need to use it, as well as the ocean's own topography and thermal layers, effectively to mask his existence and successfully carry out his missions.

A wide variety of missions are included, ranging from a simple duck shoot against some decommissioned destroyers, to the defense of a resupply convoy to Europe. Each requires a different approach and if you make it through all of them, you are sure to come out with a good feel for modern submarine conflict.

The graphics are reasonable. The game won't win any awards, but each station adequately displays the necessary information. The mouse is used for most action, but can be supplemented by keyboard shortcuts, especially useful to jump between the different stations.

The Amiga port appears to be fairly well done, and better than many others. But they did leave out several of the features found in the IBM version, such as head-to-head modem play and an on-line help function. It is too bad they did not do just a little more and include these useful features. It would be great to dial up a friend who owns an IBM and do battle beneath the cold seas.

•AC•



Electronic Arts' 688 Attack Sub

simulated weather conditions for all twelve months. According to the authors, their product is not only a fun game, but also a good educational tool. This hype may be a bit extreme, but the game looks solid and can be interesting to play.

The game graphics are fairly crisp and clear. An underlying square grid is used for elevation terrain data, and the trees, bushes, and other obstacles look attractive. It may have been possible to add more detail, but considering the large number of changing views common in a real game of golf, Melbourne House followed through rather well.

One feature that's a bit difficult to master is the swing itself. Most golf games use a vertical bar that starts up with the first mouse click, down with the second (setting the strength of the shot) and hits the ball with the third click. Ideally, the third click is to occur when the bar is back down at the starting point.

While this game uses the same three clicks, the accuracy mechanism is determined by the position on a circular gauge, similar to a car speedometer. This needle bounces back and forth very rapidly, and it can be difficult to get an

Product Information

NORTH & SOUTH

Data East USA, Inc.
1850 Little Orchard Street
San Jose, CA 95125
(408) 286-7074
Price: \$44.95
Inquiry #229

Budokan, The Martial Spirit

Electronic Arts
1810 Gateway Drive
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Inquiry #230

Aquanaut

Miles Computing
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TEXT PLUS V2.0 (FFD #359)

THIS IS A SIMPLE TEXT EDITOR THAT WILL have you writing letters in minutes. You can run it from the CLI or Workbench.

When loaded, Text Plus opens an untitled document with a displayed ruler. You can start typing your letter from here. In the top right corner, page, line, and column number are indicated. Also shown is the mode you are in, ASCII or Letter, plus whether the insert mode is on or off.

At first it appears to be a basic word processor, but it has some very interesting features, such as the Load option. Click on this option and a fileRequester pops up with three directory gadgets: File, Drawer, and Volume. This makes finding files or directories quick and simple. Just select (or type in) the Volume (DH0:, DF0:, etc.), and the File gadget displays all the files in that volume, and the Drawer gadget displays all the drawers in that volume.

by Aimée B. Abren

That's not all. There are also gadgets that let you make a directory, rename a file, or even delete a selected file.

Files can be loaded as ASCII files or Letter files (.txp). The Delete File, Append File, Print, and Save options work as expected.

The Save As option works in the same fashion as the Load option in that three directory gadgets appear, as well as Delete, Rename, and MakeDir options. This makes it easy to save a file in a specific location.

Text Plus V2.0 was created as a German word processor, and one option—Auto-Div On/Off—was included to help split very long German words in accordance with the rules of German grammar. The problem is, if this option is left on, it tries to split long English words according to German grammar. For this reason, it is recommended that you keep this option off.

Another feature is the GO TO option, which searches for a specific string typed in by the user and places the cursor on the first letter of that string when found. GO TO only searches Column One, so if the string is in the middle of a line, it won't be found. GO TO is also case-sensitive.

Text Plus V2.0 includes the basic word-processing options necessary to get those letters out in a hurry. It is worth checking out. *Author: Matt Dillon*

QUICK PICKS

BLOB V1.1 (FFD #358)

When run, this screen hack will make blobs of red slime drip down your screen. You can run more than one blob at a time (seven total). Includes sources in C. *Author: Guido Wegner*

REDATE (FFD #358)

"Scans a disk and dates each directory according to the most recent item contained within (not including .info files). Ideal for use after a COPY ALL CLONE, where the directories are CREATED rather than copied and thus lose their date information." Includes source in Assembler. *Author: Jim Butterfield*

VIEWDIR (FFD #358)

ViewDir is a directory-reading program similar to the List command, but it also displays SIZE of directories and TYPE of files. The three flags used are -b, -i, -t, which: display file/directory in blocks, do not display .info files, and forget about displaying type, respectively.

This is an updated version to the original found on FFD #251. One new feature includes a summary line displaying the contents of a directory in total. Includes source in Assembler. *Author: Jim Butterfield*

COMPDISK (FFD #353)

CompDisk is a compression/decompression package. It can be executed from both the CLI and Shell. Disks

are read track-by-track, and are usually compressed to about 50 percent of their original size. Unused blocks are zeroed to speed up compression. Includes source in C. *Author: Olaf Barthel*

FASTBLIT V 1.0 (FFD #354)

A small utility program to speed up blitter operations by up to 60 percent. Fastblit can be run by the CLI or Shell. Includes three Keyboard options: ? - Help page; A - Activate fastblit; R - Remove fastblit.

Author: Ralf Thanner

UPDATES

NCOMM (FFD #356)

NComm is a communications program based on Comm version 1.34 by DJ James. Includes auxiliary programs AddCall, Callinfo, GenList. This is an update to version 1.8 on FFD #230. *Authors: DF James, Daniel Bloch, Torkel Lodberg, et al.*

MG (FFD #352)

This is the beta version of mg3, an update to mg2b on FFD #147. This allows you to create macros and run them from your start-up file. Major changes include an ARexx port, internal reorganization, and the addition of named macros. Please note that this is still a beta version and has not been thoroughly tested. There are two known bugs include: 1) Overwrite mode does not work in macros, and 2) the rename does not update the buffer in Direx mode. Source files are compressed with lharc to fit on disk. *Author: Mike Meyer, et al.*

NORTHHC V 1.1 (FFD #353)

This is a complete public domain C environment. Everything you need to compile and link C programs is here. Files are compressed to make copying easier. This is an update to version 1.0 on FFD #340. Only partial source included. *Author: Steve Hawtin, et al.*

MANDEL MOUNTAINS V2.0 (FFD #354)

This program renders 3-D images of close-ups of the Mandelbrot and Julia sets. Some new features include: support of double precision for the entire calculation process, including the main iteration loop; Changeable Color Range; and the Julia set option. Included are some sample images. This is an update to version 1.1 on FFD #295. This program is Shareware. Binary only. *Author: Mathias Ortmann*

MEMGUARD V IIIa (FFD #354)

Similar to MemWatch, MemGuard checks the first 100 longwords in a specific location for random trashing. Unlike MemWatch, MemGuard runs as a low-level interrupt routine; therefore, barely any processing time is wasted. New features include a more user-friendly CLI

interface, and an improved check routine. This can be run from the CLI or Workbench. This is an update to version III on FFD #325. Binary only.

Author: Ralf Thanner

TRACKSALVE V 1.3 (FFD #355)

Made to improve the Trackdisk, TrackSalve removes all known bugs and patches the Trackdisk to allow reading of good sectors. TrackSalve can read back the most recently written track to see if the data was received. This is an update to version 1.0 on FFD #312. Includes source in C and Assembler. Author: Dirk Reisig

LOADIMAGE V 1.11 (FFD #355)

An IFF ILBM reader that loads IFF-ILBM, EHB and HAM files. It accepts overscanned pictures, and allows you to scroll around in the bitmap if the picture is larger than the current display. Updates include: the rubber box in the graphics dump routine now works, scrolling will not hang if the mouse is dragged one pixel away from the screen, and the AutoRequest has been replaced by a Custom Requester. LoadImage can run from both the CLI and Workbench. This is an update to version 1.9 on FFD #281. Includes source. Author: Olaf Barthel

REXXHOSTLIB V34.12 (FFD #355)

A shared library for creating and managing AREXX-host environments. This version has been recompiled with Aztec C 5.0. Now the library can be compiled using 16-bit integers, more sanity checks appear in the REXX Host creation/management procedure, and more clean-ups in REXXStrCmp. This is an update to version 1.6 on FFD #325. Author: Olaf Barthel

PRINTHANDLER V 1.6 (FFD #352)

A custom PRT: device driver with single pages and data spooling support. This is an update to version 1.1 on FFD #282. C Source included. Author: Olaf Barthel

ROADROUTE V1.5 (FFD #358)

A trip planner to help find the "best" route to get to your destination. City and road names are included, but you can add more to the data file as needed. Also includes RoadScan, a checker of RoadRoute data files. This is an update to the original on FFD #251. Includes C source. Author: Jim Butterfield

UUCP V 1.06D (FFD #360)

An implementation of UUCP for the Amiga, including mail and news. Based on William Loftus's Amiga UUCP 0.40 release. This is an update to version 1.03D on FFD #313. Includes source. Enhancements by Matt Dillon

TREE WALK (FFD #352)

A file tree-walking subroutine which includes a CLI interface that uses C expression instead of UNIX-like

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flags. Tree Walk also has a program to tell you if the directory tree will fit on a specific disk or, if it won't fit, how many blocks are needed. This is an update to FFD #289. Includes source. Author: Mike Meyer

KEYMACRO V 1.4 (FFD #354)

A program designed to provide an easy way to manage keyboard macros and use hot-key execution. You are allowed up to eight functions to a key, including the cursor and return keys. You can edit the macro list by calling up KeyMacro.

Installation is easy: copy the required files in their proper directories and type "KeyMacro" to install/update macro keys. This is an update to version 1.0 on FFD #325. Includes source in C. Author: Olaf Barthel

EMPIRE V2.1w (FFD #357)

A game of exploration, war and economics. Empire is a multiplayer game which can last several months. New features include: a client-server system, real-time private player-to-player messages, and other features. Gameplay can take place by modem or keyboard. This is an update to version 1.33w on FFD #329. Binary only. Authors: Chris Gray, David Wright, and Peter Langston

Note:

At the request of Spectrum Holobyte, the Tetris-clone game was removed from the following Fred Fish disks: #221, #230, #238, #305, #324, and #357. They will now be called "Revision A". This was the only revision made to these disks.

•AC•



R O O M E R S

by The Bandito

[The statements and projections presented in "Roomers" are rumors in the purest sense. The bits of information are gathered by a third party source from whispers inside the industry. At press time, they remain unconfirmed and are printed for entertainment value only. Accordingly, the staff and associates of Amazing Computing™ cannot be held responsible for the reports made in this column.]

CDTV IS HERE! YES, THE CD-ROM/Amiga-based interactive unit that The Bandito has been telling you about was finally unveiled at the summer Consumer Electronics Show in Chicago. Commodore calls the format Commodore Dynamic Total Vision, or CDTV for short. Which came first, the acronym or the name? No prizes for that guess. Nolan Bushnell was promoting the Commodore Interactive Graphics Player at CES wearing a big smile, since it's now his project. However, The Bandito found it curious that CDTV was not shown openly, but was hidden away from the eyes of the crowd. Commodore wasn't even making press kits available for distribution in the press room, which is unusual, to say the least.

The system price was announced at "well under a thousand dollars", which The Bandito hears will be \$899 when it ships. And when is that? Well, Commodore said "third quarter", but The Bandito suspects it might be closer to Christmas than that. Reports are that the final production model

of the board wasn't done by CES; the prototype still had lots of jumper wires.

So what can you do with this thing? Of course, there will be an amazing amount of entertainment software from major game companies. The Bandito hears that many of the best Macintosh CD-ROM titles are being converted to CDTV, such as Xiphias' Timetable of History.

Commodore was seen huddling with major mass-market accounts, trying to line up distribution for CDTV. Word has it that Commodore has already signed up MacDuff's and Video Concepts; now they're aiming for KMart, department stores like Macy's, and trying to expand their presence in Sears. At least, A500's will go all those places, and Commodore hopes to get CDTV into the same locations. It will be interesting to see how they differentiate between the two in the marketplace. The Bandito hears that pricing on the A500 will be allowed to "float"; that is, Commodore will let their mass market distributors chop the prices back as much as they want. This should lead to a street price in the \$400 range by Christmas, and possibly lower.

Commodore is also looking for international distribution of CDTV; it looks like a particularly good product for Japan.

But The Bandito hears that the software demos shown at CES were unimpressive. Commodore chose companies with CD-ROM experience rather than Amiga experience to create the demos. As a result,

they got some rather slow and ugly series of pictures, which were not the best that the hardware is capable of—not even close. Hopefully, the buyers at CES can look beyond the lousy demos. And hopefully Commodore will get some better demos created quickly. How about a Demo Reel on CD? That would show off some impressive full-motion video.

MORE FROM WEST CHESTER

Commodore has announced support for a CD-ROM in a future version of AmigaVision, a clear indicator of how important they expect CD-ROM to be. Also, Commodore let slip that they are indeed looking at the DVI chip set, as The Bandito notified you some time ago. A future version of CDTV might well have this chip set included—perhaps even a future Amiga. The discussion is still going on, though, so don't expect action for quite some time.

Commodore has unveiled a new educational discount on Amigas. How does \$729 for a complete A500 system grab you? They are, in fact, offering big savings on everything up to and including Amiga 3000s. Looks like they're getting serious about trying to garner some sales to schools.

As hordes of buyers eagerly await the arrival of the A3000 in the stores, more news about this wonder machine is coming to light. The Bandito hears that an expansion box is being tinkered with in Commo-

dore labs—the idea being to add more slots for those who just can't get enough. And at least one major peripheral vendor has a cache card in the works for the A3000, as well as a 68040 card. Look for announcements this fall for 68040 add-Ins. The '040 card would have zero wait state and zip along at 40 MHz, from what The Bandito hears. Commodore may well have the first 68040 personal computer on the market, beating Apple by some months. Look for an announcement of a new Amiga model in early 1991.

Other companies are working on third-party RISC (reduced instruction set computer) microprocessors that would give tremendous performance boosts, but applications would have to be written especially for them.

The Bandito has been ferreting out some additional information about Workbench 2.0. Apparently, it has hooks built into it for virtual memory, a scheme that fools the computer into thinking that a fast hard drive is actually megabytes of RAM. Virtual memory is high on the list for the next version of the operating system (which is currently dubbed 3.0 for those keeping score). Other planned features of 3.0 include outline fonts and support for higher resolution graphics modes.

And while we're talking about higher-resolution graphics, The Bandito hears that there's at least one solution on the way. It's called HAM-E (Hold And Modify Expander), and it's a module that plugs into the RGB port of the Amiga. The HAM-E adds two new video modes: a 262,144-color HAM mode and a 256-color (non-HAM) mode. Supposedly, HAM-E can be used with the blitter. Retail price is \$299, which includes a paint program that utilizes the new modes.

So where is DCTV, the box from Digital Creations that does similar things? The Bandito hears that it may take some time to make it to the marketplace. And the Bandito has heard that yet another competitor has a similar device that won't be out any time soon. Looks like HAM-E has scared off the competition, at least for now. The Bandito will check back in six months to see what the true picture is like then.

Don't hold your breath waiting for DPaint to take advantage of these new

color modes. It really requires a whole new set of palette controls and other stuff, by no means a trivial task. However, The Bandito hears that a version of Digi-Paint 3 is being prepared for the Video Toaster, to take full advantage of the Toaster's 24-bit frame buffers. Mere mortals who can't afford a Toaster may have a chance to buy this advanced paint program, possibly by Christmas. We'll see.

There's some confusion over the new Enhanced Chip Set and the upgrade policy for current Amiga owners. Commodore has yet to confirm exactly how things will be handled, or indeed when it will be made available, though things might be cleared up by the time you read this. Your local dealer should have the latest news.

GAME MACHINES TAKE OVER

NEC's handheld videogame has a few problems, according to the Bandito's spies. One of the big selling points is that it uses the same carts that their TurboGrafx desktop game machine does. Problem is, with the NEC's really small screen, you can't read the text that appears, which makes it difficult or impossible to play some of the games. Oh well, people say the thing is too expensive anyway.

The Bandito has heard that NEC's CD-ROM add-on for the TurboGrafx has a few problems, too. It seems that all the drivers necessary to run the CD-ROM take up most of the limited memory in the game console. So any CD-ROM game ends up having only a few K to play with, which is why they all seem to be endless arcade shoot 'em ups. The Bandito wonders if that is making things tough for Cinemaware, which has spent over a million bucks shooting *It Came From The Desert* for CD-ROM for the NEC. They've actually hired a star from a daytime soap, regular TV production crews, the whole nine yards. Yes, Orville, but will it fly?

Lynx, on the other hand, was very well received. Although The Bandito hears that Atari is still having problems getting people to develop software for it. And the hardware has some limitations — every-

thing has to be in memory; you can't page in graphics from the cartridge with the same ease that you can on a Nintendo. This

limits the kind of games that can be done rather severely.

The Bandito hears that Nintendo has their next-generation video game ready to launch sometime next year in the United States, and it's supposed to be a killer. The souped-up CPU supposedly makes

an Amiga look like a C64 in graphics, animation, and sound, according to a developer who claims to have seen one. Well, we'll see, won't we? The Bandito will believe it when you can buy one in Toys "R" Us. Over thirty game companies have signed up to develop software for it in Japan, where the machine will be released later this year. Look for a U.S. debut in 1991.

LEGAL EAGLES

Texas Instruments has discovered a gold mine in their old patents. It seems that TI has patents that could be worth a considerable amount of money, that cover the way data is moved between the CPU and I/O devices like printers, keyboards, mice, etc. So they've got their lawyers going after some computer makers to cough up a percent of sales as a royalty. Tandy has already agreed to this. IBM, HP, and Compaq are immune because they have cross-licensing pacts with TI, covering all these patents. But Commodore isn't, and TI is demanding that they pay up.

So is everybody just meekly submitting to TI's demands? Nope. Zenith is fighting it in court, and of course the other computer makers are rooting for them to succeed.

YOU WON'T BELIEVE IT BUT IT'S TRUE

Commodore Business Machines' Federal Systems Group is participating in a five-year subcontract with the Treasury Department to supply Amigas over that time.

*"Pulsar's Poser
PC Board that
turns an A500
into a PC XT
clone looks like
a hot item."*

The subcontract is part of a \$400 million contract awarded to Sears Business Systems. So what are the Feds going to do with Amigas, anyway? The Bandito just hopes they don't make the IRS more efficient. It could be they want to have more colorful charts on the size of the federal deficit. Or maybe they'll go to the Secret Service to help them track down hackers.

LANGUAGES

Lattice has announced a new version of their MS-DOS C compiler that cross-compiles to Amiga code, which should speed development of Amiga business software. But there's a dark cloud lurking on the horizon. Lattice's parent company, SAS Institute Inc., has taken charge of development and support for Lattice C compilers. They plan to concentrate on the corporate market and have stated that they will "reverse some product decisions". Does this mean the end of support for Lattice C for the Amiga? Concerned users had better make their opinions known (and fast) to Lattice, or the Amiga version may just fade away.

Meanwhile, The Bandito hears that Pascal for the Amiga may be arriving soon from Europe. A domestic version is also reported in the works. And will we see a new version of BASIC? The current version doesn't work under Workbench 2.0, and it breaks on the A3000. Negotiations are continuing with Microsoft, but The Bandito doesn't think it will happen.


SEND IN THE CLONES

Pulsar's Power PC Board that turns an A500 into a PC XT clone looks like a hot item. It's even faster (and cheaper) than Commodore's Bridgeboard. The Bandito hears that Pulsar has a 386 card in the works for the A2000. That's what Commodore needs to do, but with a prototype in the lab they've made no plans to bring it to market. Sure, true Amigans don't need MS-DOS compatibility, but it does sell more Amigas to businesses.

Brace yourselves, because there's going to be a flood of games competing for your money this Christmas. Since the Amiga has become the #2 target machine for games in the U.S. and #1 in Europe, that

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means plenty more titles. Of course, as Sturgeon's Law states, 90 percent of them will be suitable only for land fill. But that still leaves quite a few good ones. The Bandito's current hot list: Their Finest Hour: The Battle of Britain from LucasFilms, and Harmony from Accolade.

Soft Service of Finland has unveiled Postdriver, a printer driver for the Commodore Amiga that enables usage of Postscript laser printers with all programs on the Amiga, whether the software supports Postscript printers or not. It installs right into Preferences. Once installed, the program intercepts normal printer commands from the applications software and converts it to Postscript commands.

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IBM's PS/1 line has been introduced, and looks to be a new PCjr fiasco—overpriced and underpowered, with dinky keyboards. No expansion slots, either; you have to buy proprietary expansion products from IBM (any guesses as to how cheap those will be?). The PS/1s use the 80286 chip, and the prices are ridiculous. You can get one of these things with VGA monitor and 30 megabyte hard drive for a mere \$2700. Has anyone told them that for the same price you can get an 80386 machine with better graphics, more RAM and a bigger hard drive, that's also expandable? Or how about an Amiga 3000 for just a little more than that? What planet are they from, anyway?

Yes, The Bandito thinks this sounds a lot like the PCjr all over again. These new computers are being made by IBM's typewriter division, which hasn't been doing all that well lately, what with everybody switching over to word processing. Maybe they should look into slide rules or buggy whips. Does PS/1 mean that they're half as good as PS/2s? It's really funny that IBM should make the same set of mistakes all over again, and for the same reasons. Management says, "OK, boys, you can make a low-cost computer, but make sure that they aren't good enough to threaten our PS/2 line." You get what you ask for. The Bandito predicts that Big Blue will take a big bath on these, and that the Amiga will be unaffected in the long run.

•AC•

Advanced hardware, new software, and a trip to the future highlight this summer's Amiga event.

AmiEXPO '90, Chicago

AMIEXPO, CHICAGO THIS YEAR attracted nearly 10,000 attendees. Many took advantage of the large number of master classes being held throughout AmiEXPO. One of the Amiga's most famous artists, Jim Sachs—known for *Defender Of The Crown*, *Roger Rabbit*, *Ports Of Call*, and current producer of 20,000 *Leagues Under The Sea*—taught several sessions on Amiga graphics. Oran Sands 3.0 demonstrated Amiga video techniques. Steve Segal discussed the challenging art of animation in several classes. Tony Dispoto used his talents to introduce Amiga users to the art of 3-D modeling and rendering, while Curt Kass, author of *Palette Printer*, impressed his classes with valuable lessons on publishing with large printouts, color proofing, and package design. Steve Gillmor explored the growing fields of multimedia and hypermedia through the integration of the Amiga and other media, with special emphasis on ARExx.

Of the numerous free seminars held during the exposition, Introduction to the Amiga 3000, held on the first day, was a hit. Also well attended were the two keynote speeches, given by Bob Ryan, Technical Editor of *Byte Magazine* (Saturday), and Mike Halvorson, Chairman of the Amiga Developer's Association and President of Impulse, Inc. (Sunday). Both Mr. Ryan and Mr. Halvorson offered similar messages to their audiences. They stressed the need to market the Amiga as a unique computer platform which should be introduced into business markets in ways that will best utilize its features.

Mr. Ryan called for the Amiga to coexist in the business marketplace through interoperability, the ability to transfer files smoothly from one platform to another. Mr. Halvorson concentrated his emphasis on the need to demonstrate new techniques to existing markets, such as powerful graphics and video presentations for accounting firms to display annual reports and statistical information. Mr. Halvorson extended this example by suggesting video techniques for dentists which could demonstrate the expected results of corrective surgery and other techniques to patients.

During the question-and-answer session, Mr. Halvorson was asked about Impulse's two new products expected out in July, *Imagine* and the *Firecracker* board. Mr. Halvorson was confident that both products would be available in 30 to 45 days (mid August).

Imagine is a 3-D rendering and paint program designed to take advantage of Commodore's 24-bit IFF standard. Mr. Halvorson promised that present Turbo Silver users will be able to upgrade to *Imagine* at a reasonable cost.

The *Firecracker* board is Impulse's new 24-bit graphics card. It also conforms to

the 24-bit Commodore IFF standard. The *Firecracker* will work with *Imagine*, *Turbo Silver*, *Sculpt*, and the new 3-D animation program, *LightWave 3D*.

ICD

ICD, Incorporated of Rockford, IL utilized AmiEXPO Chicago to demonstrate their new **AdRAM 540** and **AdRAM 560D** memory expansion boards for the Amiga 500. A fully populated AdRAM 540 adds 4 megabytes of RAM. The AdRAM 560D is a daughter board that fits on the populated AdRAM 540 and places an additional 2 meg of RAM, for a total of 6 megabytes of RAM. An unpopulated AdRAM 540 retails for \$159.95; the populated AdRAM 560D includes 2 megabytes of RAM and sells for \$279.95. With the volatile memory chip market, ICD cannot establish a price for a fully populated system.

BLACK BELT SYSTEMS

Black Belt Systems announced several new products for the Amiga community. Products ranged from an LED readout display panel to a HAM Extender board that will generate 256 colors from a pallet of 16 million all through the RGB port of any Amiga. Black Belt Systems' Ben Williams was very pleased to announce that all of the new products are ARExx controllable.

Board Master™ is Black Belt's entry into the Printed Circuit Board layout arena. This \$99.95 package provides engineers with a low-cost and high-quality design program. Board Master is a comprehensive program with an extremely long list of features including full-autorouter capability and ARExx support.

Electron™ is Black Belt's schematic generator for the Amiga. At \$39.95 this tool is a low-cost, flexible system with full ARExx support. Output can be sent to IFF image files as well as most plotters and printers.

HAM-E plugs directly into the Amiga RGB port to provide your choice of two new Amiga graphics modes, 262,144 colors at one time, or 256 from a palette of 16 million colors. HAM-E promises true 24-bit RGB. This \$299.95 package comes with a paint program and application software as well as the complete source code in Lattice C V5.0.

For the Amiga hacker, Black Belt has introduced two new products, *SoftPanel* and *C ToolShed*. *SoftPanel* is a 32 LED display which connects to an A2000 to provide a visual indicator of



Top to bottom: AmiEXPO attendees; Progressive Peripherals & Software's new ray-tracing program for 3-D Professional; keynote speakers Mike Halvorson (left) and Bob Ryan (right).

program activity. SoftPanel is also completely ARexx controllable and retails for \$119.95. C

T o o l S h e e d provides the C programmer with a series of boilerplate C utilities including a CLI help generator. Black Belt Systems has provided a long list of utilities and programming aids in this package for \$19.95.

GOLEM WARE

Golem Ware, a subsidiary of Kupke Computertechnik of West Germany—one of Europe's premier Amiga hardware manufacturers—

highlighted their **Golem Video System** color camera that features 450-line resolution and comes with a built-in RGB splitter and a copy stand. Price: \$999.00.

The **Golem Streamer** is a streaming tape backup system for all Amigas. This Streamer comes with Golem Backup Software and supports 60MB and 100MB SCSI tape units in either external or internal configurations (it can be mounted in the 5.25" slot on the A2000). Price: \$899.00

The **Golem SCSI II** is a 16-bit controller billed as "State of the Art" by its maker. With a data transfer rate of 870 KB/second, the SCSI II is available in configurations that permit external usage with the A500/A1000; the hardware is employed in a file card configuration with the A2000. Price: \$199.00.

Golem Ware put some fun and excitement into the proceedings as well with their 3-D light-gun action package named for the game featured in it, **Gateway Ypsilon**. Included is a second game, **Master of the Town**, in addition to one light gun, and the promise of three additional releases—**Worldwide Hunting**, **Virus Attack**, and **Fire Blaster**—planned for the near future.

CALIFORNIA ACCESS

"Sneak preview" status was bestowed upon a new line of modular Amiga hardware peripherals planned for release by this Los Gatos developer during the fourth quarter of 1990.

Components of **The California Access Modular System™** will include the **Bodega Bay™** expansion module for the A500, the

Malibu Board™ SCSI Controller, the **Catalina Card™** RAM expansion daughterboard, and the **Rodeo Drive™** slimline external floppy disk drive. You will be able to use them independently, or as part of one efficient system solution.

The Bodega Bay also functions as a convenient monitor stand that will turn the A500 into a real "power" computer both functionally and aesthetically. Preliminary design features are still subject to change, but it should come with one expansion slot compatible with any standard 100-pin expansion card (an optional card cage will expand the total number of slots to three), and twin 5.25" drive bays that can accommodate a standard 3.5" hard disk, and a floppy disk drive (3.5" or 5.25"). It will also have an internal cooling fan and a separate internal power supply that will eliminate the need to fumble with the A500's external power supply. The Bodega Bay will be fully Bridgeboard compatible.

The Malibu Board fits a standard 3.5" mounted hard drive and provides up to 8MB of RAM (via the Catalina Card RAM expansion daughterboard), all in one A2000 slot.

The Catalina Card will be configurable in 2, 4 and 8MB combinations with easy-to-mount SIMMS. It has been designed to sit flush with the height of a standard 3.5" mounted hard disk, when installed on the Malibu Board.

Finally, The Rodeo Drive floppy will be the first in the Amiga market to break the 1" height barrier (just 7.25" long x 4.0" wide x .75" high). Billed as the successor to the established CA-880, it will have a disable switch to conserve power, and a long cable to make positioning alongside the computer easy. The Rodeo Drive should consume very little power—just about 1.8W (read/write)—and it will be packaged in a sturdy metal case with attractive cooling vents and an anti-dust door to protect what's inside.

All California Access components will be backed by a full one-year warranty covering parts and labor. Price information is unavailable at this time.

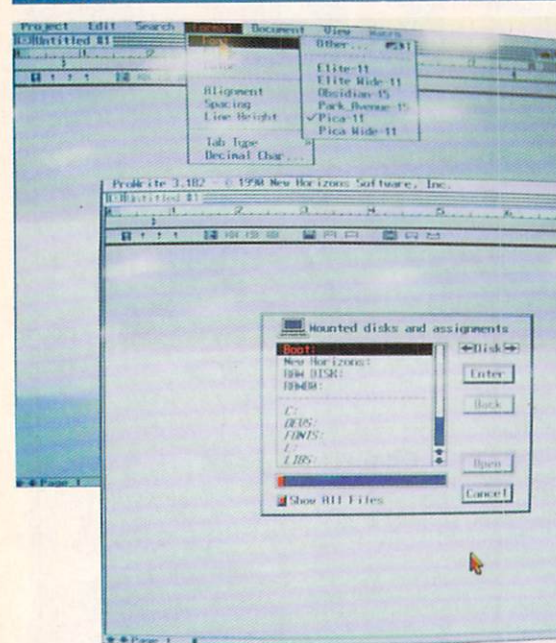
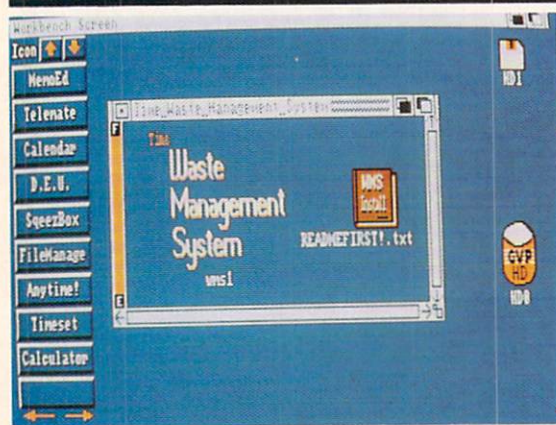
PULSAR INTERNATIONAL

Axiom Software—one of nine companies now doing business under the collective name **Pulsar International** of Westbury, NY—promoted their **Pixel 3D** autotracing software for converting bitmaps to Sculpt 4D, Videoscape 3D, Turbo Silver and DXF (AutoCAD) formats. Pixel 3D does full-color and monochrome conversions incredibly quickly and accurately, creates outlined objects, and has full extrusion capabilities to turn your logos into 3-D objects. The package requires 1MB RAM to run; Workbench and CLI interfaces are provided. Price: \$89.95.

IVS

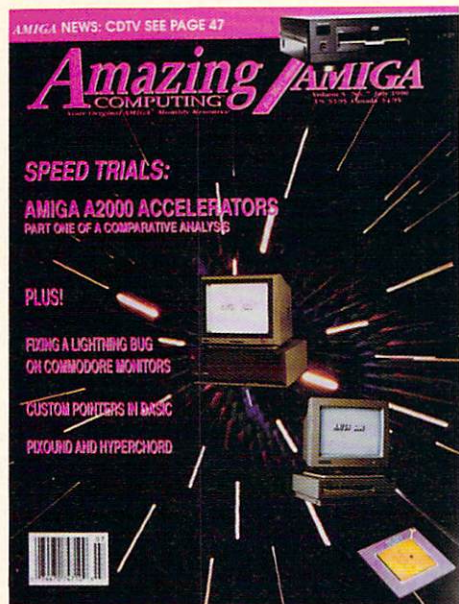
Interactive Video Systems (IVS) of Garden Grove, CA heralded the US debut of **Trumpcard Professional**, a SCSI disk controller for the Amiga with transfer rates that fly right off the charts, exceeding 1.9 MB/second. The system was also used in the Digital Creations booth to allow Digital's DCTV to run at 30 FPS and show a complex video of windsurfers which was extremely clear and detailed.

At the same time, IVS announced price reductions to their existing lines of **Trumpcard** and **Trumpcard 500** SCSI disk controllers, a major software upgrade available to existing Trumpcard/Trumpcard 500 owners, and a new



Top to bottom: Supra's 68040 card for the A3000; buttons from TTR Development's new WMS; New Horizons has added new features to ProWrite 3.0.

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- Over 2,700 commercially available products – that's 300+ more than in the previous edition!
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AC's Guide puts everything under one cover, including addresses and telephone numbers for all Amiga vendors and more than 240 Amiga user groups in the U.S. and abroad!

upgrade policy ("Trumpcard PLUS 100") for those wishing to upgrade directly to the new Trumpcard Professional. Users should contact IVS for complete details on either upgrade option.

The Trumpcard's high-speed performance is attributed to a proprietary state machine designed by IVS engineers; implemented in a custom gate array or ASIC utilizing 1.2-micron CMOS design rules to assure fast, efficient operation, it moves data between SCSI hard drives and the Amiga bus with no time lost.

Amiga users with hard drives already formatted with Trumpcard may connect a Trumpcard Professional directly to their setup with a resultant processing speed increase of 30%-80%.

Trumpcard Professional for the A2000/A3000 includes a 50-pin SCSI interface cable, a hard drive power cable and mounting brackets, and is shipped with a hard drive utility package, TCUTILS 2.0, that stresses simplicity and ease of use. It also happens to share the look and feel of Amiga operating system 2.0, making its integration into the new system software nearly seamless.

Trumpcard Professional, Price: \$279.95; Trumpcard/500 Professional, Price: \$349.95. Trumpcard, New Price: \$169.95 (reduced from \$199.95); Trumpcard 500, New Price: \$269.95 (reduced from \$299.95).

Among other products, IVS also announced shipment of **PrInterface**, an ingenious piece of hardware that permits users to plug both a printer and a sound or video digitizer, etc. into an Amiga simultaneously. PrInterface adds a second centronics compatible parallel output port to any Amiga; plug a printer into this port and all printer data bound for the machine's parallel port is redirected to the PrInterface port. Digitizing or other hardware plugs into the Amiga's parallel port and when it is time to digitize, the digitizer software communicates directly with the digitizer.

PrInterface supports full multitasking, allowing printing while the parallel port is in operation. It works through Preferences, assuring full compatibility with all printers supported by the system. Price: \$79.95.

NEW HORIZONS SOFTWARE

Brian Sarrazin of New Horizons Software was eager to demonstrate three additional enhancements to their new release of **ProWrite 3.0**. A new Font Sub Menu allows the user to easily add any additional fonts and sizes—up to 18 different fonts. With the sub menu a user can now select a font and add it to the menu without going through Preferences. Now, there is a selection of the most used type fonts easily accessible.

ProWrite now has the ability to speak text directly from any ProWrite document. The speech can be written phonetically or ProWrite can convert text to phonetics with an added educational element. This special feature was requested by educators of the visually impaired. Voice controls allow ProWrite to speak with a male, female, or robotic voice and permits complete adjustment of the speed and pitch.

ProWrite has also added a new file requester that moves back and forth through the mounted devices and steps through the different levels of the devices and assignments. This new feature allows you to access a particular assignment or path name.

DIGITAL CREATIONS

Digital Creations demonstrated their **DCTV**, a new way of looking at the video data coming from

the computer. DCTV receives a compressed digital video data stream, expands it out and creates the NTSC video signal. It does this over and over again at sixty frames per second in real time. To do this the DCTV is connected to the RGB and parallel ports of the Amiga. The RGB port provides the data for the video, while the parallel port is used to control it and to tell it when to digitize. It also uses the parallel port to send the digitized information back to the computer.

NTSC video is delivered without using expansive amounts of the Amiga's memory. The conversion system is adjustable to lower levels which allows extremely detailed final images. These lower memory levels also allow for animation. The end result is a very vivid animation using extremely small amounts of memory, so the user can complete much longer animations. This same feature allows video digitizing that can be used in other applications, again without the need for extremely large amounts of memory.

There is a paint system under development for DCTV that should be available when DCTV comes out. It is a full-color NTSC paint system for DCTV. It can import 24-bit files and deal with them directly. It deals with color through a special system that optimizes its use. It utilizes a more dynamic color range in areas where the human eye is more likely to note a difference, such as in the green of trees, or in flesh tones.

DCTV will contain the paint program and will be available in September for less than \$500.00. It will work on a one-meg system; however, increased memory will increase the system's efficiency. The plan is for DCTV and the paint program to be bundled. A delay in completion of the paint program may force Digital Creations to delay their release of DCTV.

TTR DEVELOPMENT

The **Workbench Management System**, or **WMS**, is one of the most simple and elegant systems for using the Amiga that we have seen. WMS is an unlimited amount of user-definable buttons "that allows the loading of any Amiga application whether it is a CLI or Workbench program." There is a simple button editor that allows any user to create a button to access their most-used programs.

WMS comes with eight built-in applications: A text editor, a calendar, a telephone and address system that has both a personal and business section, a cute clock which reads the time in various formats, a help system for CLI/Shell commands, ASCII chart, and AmigaDOS error codes, an archival system for telecommunication and storage, a universal tool to open almost any file, and a simple means of setting your Amiga's internal clock. At \$44.95, TTR's new product appears to be a very good deal.

SUPRA CORPORATION

Supra brought a brand-new booth to AmiEXPO. They announced a new 8 meg internal RAM for the Amiga 500 called the SupraRAM 500. They were also showing the SupraDrive 500XP which will incorporate a hard disk and up to 8 meg of RAM in one small external case.

Supra displayed what appears to be the first 68040 accelerator board for the Amiga 3000. To our knowledge, this is the first public display of any accelerator for any computer platform that utilizes the 68040. However, we did not see the unit perform, nor were there prices available.

M.A.S.T.

Memory And Storage Technology displayed their new **Blitz BASIC™**. They are waiting for the hardware dongle, which is their copy protection system for the compiler. The programs created by the compiler do not require a dongle. The dongle is only used to protect the Blitz BASIC compiler. The dongle will be available for sale to other developers to protect their programs.

Blitz BASIC is an extremely powerful programming language that has reduced the amount of instructions required to access the graphics and sound capabilities of the Amiga.

NEWTEK

NewTek literally cornered this AmiEXPO with two booths. The first booth, sponsoring their **Digi-Paint 3**, **Digi-View Gold**, and **Demo Reel 3** was the first thing that attendees saw as they came down the escalator.

The second booth occupied nearly the entire back wall of the exposition and featured live demonstrations of the NewTek **Video Toaster**, the Penn & Teller Toaster training video and a sneak preview of Allen Hastings' new animation system, **LightWave 3D**, a 24-bit 3D animation system scheduled for release in September. LightWave 3D works exclusively with the Video Toaster and includes high end features such as transparency, multiple light sources (with color), hierarchical motion for objects, lights and cameras, plus special effects such as fog, waves, and much more. Video images can be mapped to any object. The package is based on rendering instead of ray tracing which improves production time dramatically.

PROGRESSIVE PERIPHERALS & SOFTWARE

In a hospitality suite, Progressive demonstrated three new products for the Amiga to be available soon. The first is **QicTape-40**, a streamy tape backup system that will connect to the floppy port of any Amiga. QicTape-40 uses the popular QIC-40 tape format system and is promised to be as easy to use as attaching a floppy drive. The QIC-40 format also makes it possible to save Amiga or IBM formatted material and read it on the other computer platform. Advanced software tools, and options such as scheduling, make this a very attractive new device. Progressive has not yet established a price for this hardware, to be available this month.

Double Talk is Progressive's new AppleTalk™-compatible network for the Amiga. This handy device will allow Amigas to coexist on AppleTalk™ networks with Apple Macintosh™ systems. However, the system will run twice as fast (hence the name, Double Talk) when the network is established with Amigas alone. This product will also be available this month. A suggested retail price is not yet available. Also, to further enhance their work in graphics, Progressive has created a ray-tracing software program to work with their 3-D Professional.

DIGIFEX CORPORATION

DigiFeX is a new hardware manufacturer providing a series of new products for the Amiga. Some of these product designs were originally developed for the Amiga by CMI, but are coming to the market under the DigiFeX label.

Interact is an AppleTalk™ compatible network device in both A500 (\$299.99) and A2000 (\$329.99) versions. This unit will work between Amigas and will also run on a standard Mac network. It is ideal for connecting Amigas to Macintosh™ networks for printer access.

V. I. P. (Video Interface Professional) is a multiple output video encoder with several nice features at \$129.99. The MultiPORT Board with its 25 pin parallel port, 9 pin RS-232 serial port, 8 din RS-422 serial port, software, and more at \$249.99 (\$299.99 with SCSI) provides additional ports for your A2000. There is also a Processor Accelerator for the A1000 and A2000, a MIDI1 interface, and two multiple output video encoders to round out DigiFeX's growing array of Amiga tools.

ASDG

ASDG's Perry Kivolowitz stopped at AmiEXPO on his return from Commodore's DevCon in Atlanta. ASDG announced a series of modules and add-ons for The Art Department. Two file loader modules are now available for converting TIFF and PCX images generated on PC's, Macs, etc. The Art Department is a full featured 8- and 24-bit color image processing software. The initial reaction from graphics users have been very complimentary.

APPLIED ENGINEERING

This Carrollton, TX company introduced their **AE 3.5" 880K Disk Drive** (Price:

\$119.00), **RAM Works**, a 512K RAM expansion board for the A500 (Price: \$119.00), plus a new high-capacity power replacement supply for the A500 (Price: \$99.00).

LAKE FOREST LOGIC

This Lake Forest, IL company demonstrated **The Disk Mechanic**, a package of AmigaDOS utilities that includes an archival/incremental hard disk backup program, a utility that recovers deleted files and repairs corrupt disks, and a full-feature disk block editor, among numerous others. The tune-up option can boost disk performance by as much as 400 percent! Price: \$89.95

SIERRA ONLINE

Three new games brought Sierra Online in Chicago: **Iceman**, an interactive adventure game with state-of-the-art graphics and sound (Price: \$59.95); **Hoyle's Official Book of Games—Solitaire** (\$34.95); and Dynamic's **A-10 Tank Killer**, a ground attack flight simulator (Price: \$49.95).

SOFT-LOGIK PUBLISHING

Soft-Logik announced details of a new user

group/dealer support program and also put **PageStream 2.0** desktop publishing software through its paces. Price: \$295.95; \$75.00 upgrade for registered users of earlier releases.

SPIRIT TECHNOLOGY

Spirit Technology Corporation showed off **Interlok**, a broadcast-quality genlock featuring advanced, reliable circuitry that locks an Amiga scan rate to NTSC or PAL broadcast synchronizing standards. Price: \$569.00.

Also on display at the Spirit Technology booth was **Fat Trapper**, a 4-megabyte internal RAM expansion for the Amiga 500. Prices start at \$119.00 for 0K.

MICROWAY

MicroWay, Inc. highlighted their brand-new **DEB 2000**, a no-slot flickerFIXER with genlock compatibility option. Price: \$75.00.

XETEC

Xetec, Inc. exhibited **Fastcard Plus**, an ACSC controller/RAM expansion that adds up to 8 megabytes of RAM to an A2000 using no drive bays and just one expansion slot.

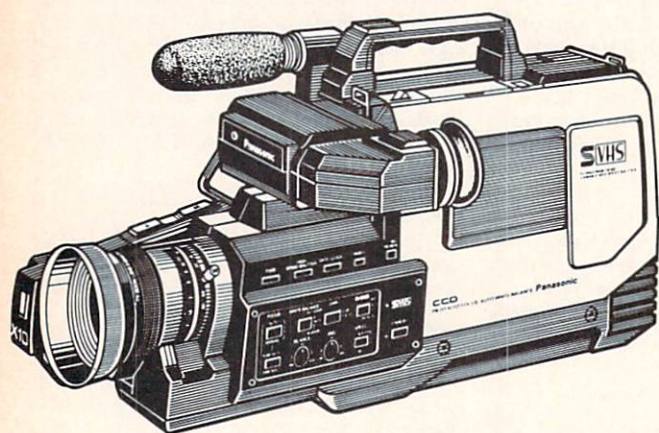
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Exhibitors, AmiEXPO '90 Chicago

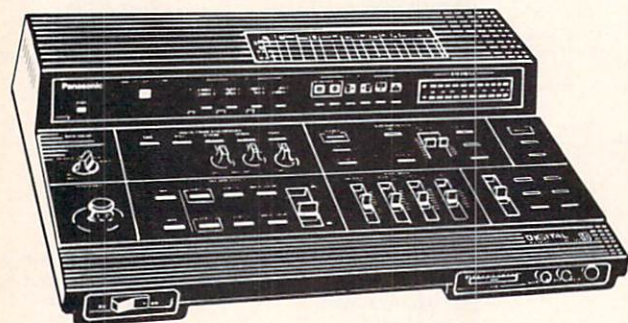
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ASDG, INC.* 925 Stewart Street Madison, WI 53713 (608) 273-6585 Inquiry #227	DIGITAL CREATIONS 2865 Sunrise Blvd, Suite 103 Rancho Cordova, CA 95670 (916) 344-4825 Inquiry #246	LAKE FOREST LOGIC, INC. 2801 E. Ballard Road, Unit E Lake Forest, IL 60045 (312) 816-6666 Inquiry #255	NEWTEK, INC. 115 W. Crane Street Topeka, KS 66606 (913) 354-1146 Inquiry #264	SUPRA CORPORATION 1133 Commercial Way Albany, OR 97321 (503) 967-9075 Inquiry #271
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* Denotes companies which did not formally exhibit, but did attend the show with information on their latest product developments.

Video For Amiga



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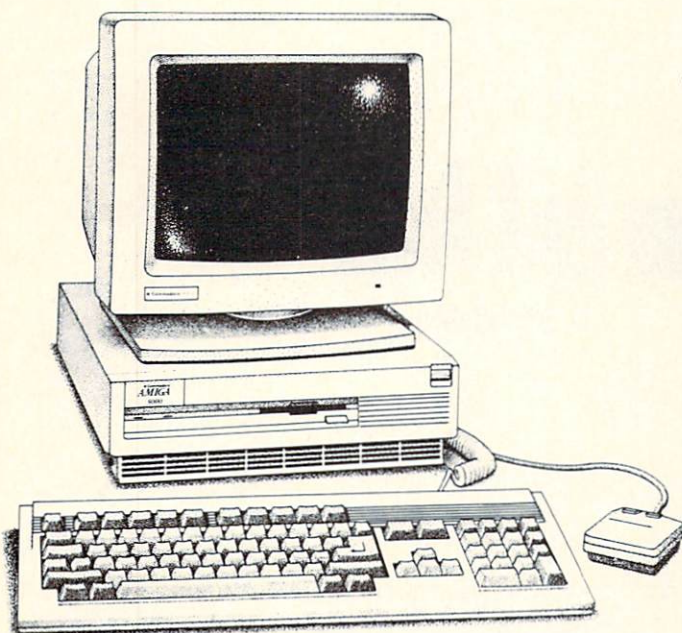
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C NOTES

From the C Group by Stephen Kemp

THE DISCUSSION OF FUNCTIONS SUPPORTING MY VERSION of doubly linked lists (or queues) continues this month. In this issue we will demonstrate one method for sorting these queues. In a doubly linked list, elements are stored in such a manner that one element "points" to both the preceding element and the next element in sequence. This is accomplished by using structures to maintain the forward and backward pointers. The structures we are discussing are defined below:

```
typedef struct x {
    struct x    *prev;
    struct x    *next;
    unsigned short len;
} QITEM;

typedef struct {
    QITEM      *bot;
    QITEM      *top;
    unsigned long cnt;
} QMAIN;
```

The first structure type is named QITEM and is "overhead" to each element maintained in a queue. Every member of a queue uses the structure to point back to the previous member and forward to the next member of the queue. An additional item is included in this structure to enable the members to handle variable lengths.

QMAIN is a structure that defines the "head" of a queue. This structure contains a pointer to the first element and a pointer to the last element of the queue (top and bot). A counter (cnt) maintains the number of items contained in the list. Notice that the order of the structure variables "top" and "bot" is important. The item "bot" is aligned in the same position as the QITEM structure member "prev", "top" is aligned with the structure member "next" in QITEM.

Doing this allows you to treat the QMAIN as a pseudo-element and make a complete circle through the queue. When you address the header in this manner, the last element is the previous element, and the first element is the next element.

The last few columns have included the basic code required to handle doubly linked lists using these structures. Basic queuing

functions include those that initialize and free a queue, add items to and remove items from a queue, and positioning functions that allow you to locate particular elements. Implementation of queues varies, but if you missed those previous articles, you can probably adapt this month's sorting function to meet other requirements.

Once a list of items has been established, one common task that your program will attempt is sorting the list into some particular order. Sorting any kind of list or set of items is not the simplest of operations. There are numerous books devoted entirely to sorting methods and implementations. The optimum method to use depends upon the data to be sorted and the relative "order" that exists before the sort begins. If you know what method best suits your data, then you may opt to use that method.

However, when writing a generic sort routine, you'll have to limit the sort function to one or two methods, since you can't include every possible method into one function. Optimizing a function to accommodate multiples can be done. Basically, supporting more than one sort method means that a "pre-pass" must be made through the data to determine the appropriate sort method to use before the actual sort begins. Program speeds will begin to fall as you support more methods because the time it takes to perform the pre-pass will increase as you add more methods to evaluate. All of this is beyond the scope of this article and the quesort function included here performs only one type of sort.

Listing One contains the support functions required for the example program provided in Listing Two. The functions qinit, qadd, qdel, and qfree were all part of the original article and will not be explained in detail again. Sorting requires two new functions (that appear last in Listing One): quesort, and swap_ptr.

A first glimpse of the definition of the quesort function may intimidate some, but it is not as bad as it looks. The first parameter is the address of a QMAIN (the head) of a queue. The second parameter is the offset of the data within each element that is to be sorted, and the third parameter is the width of the information to be sorted. Since queue elements can be whatever you desire, you will not always want to sort a queue by the entire element's width,

nor will you always want to begin at the first data byte. Allowing the offset and length to be included as parameters means that the sorting function can be written in the most versatile manner. The last parameter is a pointer to a function and may be new to many of you.

Stating the fourth parameter in words is probably the easiest way for you to understand the definition. Parameter four is: A pointer to a function that returns an integer where the function expects three parameters; pointers to two data blocks that will be compared and the length of the comparison. Pointers to functions may not be common in your code, but they have the same use as any other pointer. It allows you to indirectly call a function from within another function without having to actually reference it by name.

Why include a pointer to a compare function as a parameter, rather than use the same compare for all sorts? The answer is almost the same as why the offset and length are included as parameters. Since any type of element can be stored in a queue, the comparing required for the sort to operate may involve more than a simple byte-for-byte comparison.

For example, suppose an element with the string "NAME", and another element with a string "name", are stored in a queue. Some programs may require these to be equivalent (case-insensitive), but we know that a byte-for-byte comparison will find the two strings unequal. In this instance, you might want to include the function "stricmp" (the case-insensitive string compare with length) as the compare function which would find the two strings equal.

To support sorting, the compare function that you include as the last parameter should return one of three values: Zero (0) if the two data items are the same, a negative value if the first data element is smaller than the second, or a positive value if the first data element is greater. Relying on the compare function to return these types of values means that you should be able to use any one of several C functions provided in your libraries.

In addition to stricmp, mentioned above, you could also use memcmp, strcmp, or any other function that meets the requirements specified in the prototype (even specialized functions that you might write). Note that if you want a descending sort, rather than the normal ascending provided by the library functions, then you will have to write your own compare function.

The operation of the quesort function is fairly simple. Using a loop within a loop, you first point to the last element and begin comparing it to all the elements in the queue beginning with the first element. If two elements that should be swapped are found, a flag is turned on and the inside loop completes (breaks). Then the elements are swapped. Once you have been through the entire queue in the outside loop, the queue has been sorted.

Swapping the position of elements in a queue is fairly straightforward. A specialized case that must be watched for is if the two pointers are adjacent to one another. The function swap_ptr examines for this case first and varies the method of swapping if the two elements are adjacent to one another. Basically, all that is required to swap two elements in the queue is to swap their previous and next pointers and to reassign the pointers that pointed to the two elements. It might sound complicated, but it isn't. Try a few examples on paper to better understand what the code is doing.

Once all the queuing functions have been established, the program provided in Listing Two can be written. It first initializes a new queue. Next, 22 elements (the number that can appear on

a full screen without scrolling off) are added. Elements are a structure defined by the ELEMENT typedef at the top of the program. A count during add is maintained in the structure and a random number is assigned into the other value. While the queue is being established, the count and value of each element is displayed.

After the queue has been established (and you press "Enter"), then the queue elements are sorted by the values that were assigned. Here I should point out something that some of you may not have seen. The offset parameter, &((ELEMENT *)NULL)->val, that is passed to quesort is a way of determining the offset of a variable within a structure without trying to count the size manually. Your compiler will determine the offset like this: "Evaluate the offset of val in the structure ELEMENT from the address zero." The offset of any item from the address zero is the number of bytes required to index into the structure where that item begins. This is a useful coding "trick", because it means that if you later add more items (anywhere in the structure) you do not have to search your code for any calculations that you made by hand. I normally have a macro definition in my include files that accomplishes this task, much like the "sizeof" directive that the C language offers. The macro can be defined as:

```
#define offsetof(a,b) ((int) &(((a *)NULL)->b))
```

The "a" parameter is the structure typedef name, while parameter "b" is the structure item in question. With this macro I could have changed the call to: quesort(&queue, offsetof(ELEMENT,val), sizeof(item.val), memcmp). Returning to the example in Listing Two, the call to quesort simply includes the memcmp function provided in the lattice library as the compare function. After the sort completes, the elements are redisplayed again with their original element position. Memcmp will have sorted the elements into ascending order. Pressing "Enter" will move to the next test.

As a final test of the quesort function, the items are resorted back into their original sequence. Notice that the offset parameter passed to the sort function is determined in the same manner as described above. When this sort is finished, the items are again redisplayed to verify that the sort worked properly. The final sequence should match the sequence in which the elements were originally added to the queue.

Queueing can be a great addition to many programs. It offers more versatility than arrays since the elements can be variable sizes and a variable number can be maintained without pre-allocating space. Try these functions out and see if you can put them to use. If you missed the two previous articles, try to get a copy of each and see what you have missed. You can learn a lot from experimenting.

Listing One

```
#include "queue.h" /* defines prototypes and QITEM and QMAIN */
#include <stdlib.h>
/*-----*/
/* QINIT establishes a new Queue by pointing the top and bottom */
/* pointers to the head of the queue and sets count of items to */
/* zero. WARNING: if you do this function is passed an "active" */
/* queue then the memory and elements that it contains will be */
/* lost. */
/*-----*/
void qinit(QMAIN *que)
{
```




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```

que->top = (QITEM *)que; /* point top to MAIN */
que->bot = (QITEM *)que; /* point bottom to MAIN */
que->cnt = 0L; /* No items in queue yet */
}
/*-----*/
/* QADD is used to add a new item to the queue in front of the */
/* QITEM pointer that was passed. To add an element to the end */
/* of a queue the pointer to the QMAIN should be passed as the */
/* member. Because of the overhead required to maintain the */
/* QITEM links the maximum element size that can be added is: */
/* (maximum unsigned short value - sizeof(QITEM)) or 65535 - 10 */
/*-----*/
QITEM * qadd(QMAIN *que, QITEM *member, void *data, unsigned short len)
{
    unsigned short reqsize;
    QITEM *memaddr, *memprev;

    reqsize = len + sizeof(QITEM); /* adjust size */
    if ((memaddr = (QITEM *) malloc(reqsize)) == NULL) /* get memory */
        return((QITEM *)NULL); /* no memory */

    memprev = member->prev; /* point to item before member */
    memaddr->prev = memprev; /* make new item's previous pointer */
    memaddr->next = member; /* new item's next is the member */

    memprev->next = memaddr; /* the previous item now points to new */
    member->prev = memaddr; /* the next item points back to new */

    memaddr->len = len; /* the length of the item stored */
    movmem(data, (memaddr+1), len); /* store the data passed */
    que->cnt++; /* count increments for this queue */
    return(memaddr); /* return the QITEM pointer to new item */
}
/*-----*/
/* QDEL will remove the item pointed at by the passed pointer */
/* from the queue indicated. */
/*-----*/
QITEM * qdel(QMAIN *que, QITEM *member)
{
    QITEM *ptr;

    if (member == (QITEM *)que) /* first check to see if pointer is MAIN */
        return(member); /* if so then return (nothing to do) */
}

```

```

ptr = member->prev; /* point to the item before the element */
ptr->next = member->next; /* it now points to the item after member */
}
ptr = member->next; /* point at the item after the element */
ptr->prev = member->prev; /* it now points back to the item before */
que->cnt--; /* the queue has one less element */
free(member); /* free the item */
return(ptr); /* return the pointer to the next item */
}
/*-----*/
/* QFREE will free all the memory associated with the members of */
/* the queue indicated as the parameter. */
/*-----*/
void qfree(QMAIN *que)
{
    for(que->cnt > 0;){
        qdel(que, que->top);
    }
}
/*-----*/
/* QUESORT (named so it won't conflict with any "quick sort" functions) */
/* that might be in your C libraries is a function that expects */
/* a queue's Main pointer and the offset and length of the data that */
/* is to drive the sort. In addition, it expects a function pointer */
/* to a "compare" function that will return a negative value if the */
/* data is less than the second, 0 if the two are equal, and a */
/* positive integer if the first block is greater than the second */
void quesort(QMAIN *que, unsigned offset, unsigned len,
             int (*comp)(void *dat1, void *dat2, unsigned len))
{
    QITEM *ptr1, *ptr2;
    char *off1, *off2;
    char moveit;

    for(ptr1 = que->bot; ptr1 != (QITEM *)que;){ /* point to rear */
        moveit = 0; /* flag of swap */
        for(ptr2 = que->top; ptr2 != ptr1; ptr2 = ptr2->next){ /*
start */
            off1 = ((char *) (ptr1+1)) + offset; /* point at first off
*/
            off2 = ((char *) (ptr2+1)) + offset; /* point at second
off */
            if ((*comp)(off1, off2, len) < 0){ /* call compare func
*/
                moveit = 1; /* if 1 < 2 then
move */
                break; /* stop looking
*/
            }
        }
        if (moveit){ /* if flag on */
            swap_ptr(ptr1, ptr2); /* if so then swap
*/
            ptr1 = ptr2; /* keep position */
        }else{
            ptr1 = ptr1->prev; /* move one back */
        }
    }
}
/*-----*/
/* SWAP_PTR is a function that will swap the position of two pointers */
/* within a queue. The data does not have to be moved */
/*-----*/
void swap_ptr(QITEM *ptr1, QITEM *ptr2)
{
    QITEM temp;

    if (ptr1->next == ptr2){ /* if one points to two */
        (ptr1->prev)->next = ptr2; /* one's prev point to two */
        (ptr2->next)->prev = ptr1; /* two's next point to one */
        temp.prev = ptr1->prev; /* save one's prev */
        ptr1->prev = ptr2; /* one's prev is now two */
        ptr1->next = ptr2->next; /* one's next is two's next */
        ptr2->next = ptr1; /* two now is before one */
        ptr2->prev = temp.prev; /* two's prev is old prev */
        return; /* swap is complete */
    }
    if (ptr2->next == ptr1){ /* if two points to one */
        (ptr2->prev)->next = ptr1; /* two's prev point to one */
        (ptr1->next)->prev = ptr2; /* one's next point to two */
        temp.prev = ptr2->prev; /* save two's prev */
        ptr2->prev = ptr1; /* two's prev is now one */
        ptr2->next = ptr1->next; /* two's next is one's next */
        ptr1->next = ptr2; /* one now is before two */
        ptr1->prev = temp.prev; /* one's prev is old prev */
        return; /* swap is complete */
    }
    (ptr1->prev)->next = ptr2; /* prev's next points at two */
    (ptr1->next)->prev = ptr2; /* next's prev points at two */
    (ptr2->prev)->next = ptr1; /* prev's next points at one */
    (ptr2->next)->prev = ptr1; /* next's prev points at one */
}

```



```

temp.prev = ptr1->prev;      /* store one's previous */
temp.next = ptr1->next;      /* store one's next */

ptr1->prev = ptr2->prev;      /* get two's prev */
ptr1->next = ptr2->next;      /* get two's next */
ptr2->prev = temp.prev;      /* assign temp prev */
ptr2->next = temp.next;      /* assign temp next */
}

```

Listing Two

```

/*
 * This program will test the integrity of the queue sorting functions
 */
/* functions.
 */
/*
 */
#include "queue.h"
#include <string.h>
#include <stdio.h>

/* Define this structure to place data into the queue */
typedef struct {
    short cnt;          /* a counter for elements */
    short val;          /* a value for random */
} ELEMENT;

void main()
{
    QMAIN      queue;
    ELEMENT    elm;
    QITEM      *ptr;

    qinit(&queue);      /* initialize the queue */

    /*
     * Assign random elements
     */
    /*
     */
    srand(1);           /* seed the random the same each time */
    elm.cnt = 1;        /* start index with the first one */

    for( ; queue.cnt < 22; elm.cnt++){ /* add 22 items */
        elm.val = rand(); /* get a random number */
        printf("%d %d\r\n", elm.cnt, elm.val); /* print out each
        element */
        ptr = qadd(&queue, (QITEM *) &elm, sizeof(ELEMENT)); /*
        add */
        if (ptr == NULL){ /* if failed to add */
            printf("Cannot add more items\r\n"); /* give a message */
            break; /* end the test */
        }
    }
    getchar();          /* stop to look */

    /*
     */
    /* sort the elements on the random value that was generated. The compare
    */
    /* function assigned is the itncmp function defined later.
    */
    /* The length to compare is the size of the element (a short)
    */
    /*
     */
    quesort(&queue, &((ELEMENT *) NULL)->val, sizeof(elm.val), memcmp);
    /*
     */
    /* Now redisplay the queue after it has been sorted.
    */
    /*
     */
    for(ptr = queue.top; ptr != (QITEM *) &queue; ptr = ptr->next){
        movmem((ptr+1), &elm, sizeof(ELEMENT)); /* get element from
        queue */
        printf("%d %d\r\n", elm.cnt, elm.val); /* print it out */
    }
    getchar();          /* stop to take a look */

    /*
     */
    /* Now resort the queue back into the original sequence by using the
    */
    /* ELEMENT offset of the cnt index that was assigned to each during
    the */
    /* add process.
    */
    /*
     */
    /*
     */

```

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```

quesort(&queue, &((ELEMENT *) NULL)->cnt, sizeof(elm.cnt), memcmp);

for(ptr = queue.top; ptr != (QITEM *) &queue; ptr = ptr->next){
    movmem((ptr+1), &elm, sizeof(ELEMENT)); /* get element from
    queue */
    printf("%d %d\r\n", elm.cnt, elm.val); /* print it out */
}

qfree(&queue); /* always free the queue
*/
}

```

Queue.H

```

typedef struct x {
    struct x *prev;
    struct x *next;
    unsigned short len;
} QITEM;

typedef struct {
    QITEM *bot;
    QITEM *top;
    unsigned long cnt;
} QMAIN;

void qinit(QMAIN *que);

QITEM * qadd(QMAIN *que, QITEM *member, void *data, unsigned short len);

QITEM * qdel(QMAIN *que, QITEM *member);

QITEM * qset(QMAIN *que, unsigned long *item);

unsigned long qpos(QMAIN *que, QITEM *ptr);

QITEM * qput(QMAIN *que, QITEM *ptr, void *data, unsigned short len);

void qfree(QMAIN *que);

void quesort(QMAIN *que, unsigned offset, unsigned len,
             int (* comp)(void *dat1, void *dat2, unsigned len));

void swap_ptr(QITEM *ptr1, QITEM *ptr2);

```

•AC•

Fully Utilizing the 68881 Math Coprocessor

Part III: Timings and Turbo_Pixel Function

by Read Predmore, Ph.D.

THIS ARTICLE ON PROGRAMMING THE MC68881 MATH coprocessor concludes a series that began with "Turbocharging the Savage Benchmark" and "Turbo Mandelbrot and Julia Set Calculations", published in the March and June 1989 issues of *Amazing Computing*, respectively (see references on page 77 of this issue).

As promised, I wind up the series by comparing the speed of calculating the Mandelbrot set for the Amiga 2000, with and without an MC68881 math coprocessor. Also presented here are timings for the Amiga 2500, with and without double precision register variables. Then follows a discussion on the turbo-pixel() function for writing a row of colors into a SuperBitMap.

Finally, I present two debugging tools for working with the '881 math coprocessor, store_881() and print_881(). The store_881() function will transfer a floating point number into the '881, and print_881() will print out the internal floating point registers of the math chip. These can be used in a program or from within the Manx SDB debugger.

MANDELBROT SET TIMINGS

Table One is a summary of the time required to calculate a Mandelbrot set on both an Amiga 2000 and an Amiga 2500. Since these calculations were done just for timing, no screen was opened to display the Mandelbrot set and no pixels were actually written.

Table One: Mandelbrot Set Timings

Amiga 2000 Timings

Aztec C Compiler option	+FF	+FI	+FI
Linker math library	M.LIB	MA.LIB	MA.LIB
MC68881 Assembler Code	No	No	Yes
Run-time library	Timings in seconds (Relative Speed)		
V1.3 Libraries	600 (1.8)	1069 (1.0)	104 (10.)
V1.2 Microbotics Libraries	590 (1.8)	645 (1.7)	135 (7.9)
Microbotics StarMath V1.01	589 (1.8)	755 (1.4)	113 (9.5)

Amiga 2500 Timings

Compiler option	+FF	+F8	+FI
Linker math library	M.LIB	M8.LIB	M8.LIB
FP Register variables	No	No	Yes
Run-time library	Timings in seconds (Relative Speed)		
V1.3 Libraries	335 (3.2)	129 (8.3)	39 (27.)

The timings are for a full view of the Mandelbrot set which extends from a lower left corner at the point $(X=-2.25, Y=-1.5)$ to a upper right corner at the point $(X=+0.75, Y=+1.5)$. Each Mandelbrot set was calculated for a 320 x 200 screen. The maximum number of iterations for the Mandelbrot set was 16 for each point with a maximum for the sum of X^2 and Y^2 of 4.0 (the Z2MAX parameter in the calc_dble() function) (Predmore, "Listing Two", V4.6, p. 73).

For the Amiga 2000, the first row of the table gives the Manx Aztec C68K/Am 3.6 compiler (CC) floating point option, which is +FF for Motorola Fast Floating point (32 bits) or +FI for IEEE 754 double precision (64 bits) (Predmore, V4.3, pp. 69-72). The next row gives the math library, which is linked into the final executable file. Then, in Table One, the version which uses the MC68881 assembler and the '881 internal registers are indicated by a Yes.

Following this information are three rows of timings for different options of the run-time math libraries, such as MATHIEEEDOUBBAS.LIBRARY and MATHTRANS.LIBRARY. The three different sets of run-time libraries are:

- 1) The Amiga V1.3 libraries.
- 2) The V1.3 libraries supplied by MicroBotics to utilize the MC68881 math chip on their Multi-Function Module (Predmore, V4.3, pp.69-70).
- 3) The StarMath V1.31 resource from MicroBotics.

The V1.3 library IO68881.LIBRARY is required by the assembler routine for the base address of the MC68881 registers.

The StarMath resource was developed by Dale Luck, one of MicroBotics' original Amiga designers. It is installed in the Expansion drawer and activated each time the system is rebooted. The MicroBotics documentation for StarMath describes it: "StarMath is a Resource designed to permit the use of the MicroBotics StarBoard2 MultiFunction Module 68881 Math Chip with AmigaDOS 1.3 IEEE libraries to provide hardware, double-precision floating-point math."

Note that StarMath permits multitasking access to the MC68881 math chip on your MicroBotics Multifunction Module.

I do not know exactly how this is accomplished, but it seems to be analogous to a wedge or patch, so that the standard 1.3 math library calls are actually executed by the '881. This is a major step: now programs such as Sculpt-Animate 4D, which work with the math libraries, will use the '881 math chip and have an approximate increase in speed of 40 percent.

In Table One, in addition to the timings in seconds, the speed relative to the double precision time for the AmigaDOS V1.3 libraries is given in brackets (e.g., [10]).

In the lower part of Table One, the Amiga 2500 timings again have the C compiler math option. The double precision option uses the +F8 selection and the M8.LIB math library. In that case, the floating point calculations call the MC68881, which is directly linked to the 68020 CPU in the Amiga 2500. The next row indicates whether the version of the program uses register variables. In the third column, four double precision variables (zr, zi, iz, and z2) were declared as register variables in the calc_dble() function. I selected the variables that were used the largest number of times in the inner loop of the calc_dble() function (Predmore, V4.6, p. 94).

For the Amiga 2000 timings, the Motorola Fast Floating Point (FFP) option is 80 percent faster than the double precision option which used the V1.3 libraries. The speed of the FFP option is independent of the runtime libraries since the FFP routines are linked into the execution module and do not use the run-time libraries. The double precision option has a 70 percent increase in speed when the V1.3 MicroBotics libraries are used and a 41 percent improvement with the StarMath resource.

The version which used the MC68881 Assembler code (Predmore, "Listing Three", V4.6, pp. 95, 97-98) has sped up improvement factors, depending on which library is being used.

The Amiga 2500 timings reflect both the increase in the system clock from 7 to 14 MHz and the fact that there is a 32-bit data bus on the Amiga 2500, rather than a 16-bit data bus, as on the Amiga 2000. For the FFP option, there is an increase in speed (by a factor of 1.8) between the Amiga 2000 and the Amiga 2500. As was discussed in the Part I of this series, the Motorola FFP calculations on the Amiga 2000 and 2500 cannot use the 68881, since the FFP data format is not an IEEE 754 standard.

There is a dramatic improvement because of the 68881 math coprocessor for the double-precision option on the Amiga 2500 over that of the Amiga 2000. As mentioned, if the most frequently used double-precision variables are declared as register variables, there is an additional speed-up factor of 3, for a net factor of 2700 percent.

Note that the MC68881 Assembler version on the Amiga 2000 has a speed comparable to that of the Amiga 2500, without register variables.

Another hardware accelerator which I have not tested yet is the Processor Accelerator, originally produced by CMI (Rich J. Grace, V4.6, pp. 63-64), and now distributed by DigiFex. This board plugs into the motherboard and has a 68000 running at 14.3 MHz with a socket for a 68881 at 12.5 or 16 MHz. It also accesses the '881 as a peripheral like MicroBotics' MultiFunction Module, so it could be used with the '881 macro programs just by changing the base address for the '881 (MC68881_BASE). Since the DigiFex '881 can have a 12.5 or 16 MHz clock speed as compared to the 7 MHz speed of the MicroBotics '881, the DigiFex unit should run the '881 macro programs even faster than the MicroBotics unit. There are no special math libraries supplied with the Processor Accelerator, so it does not have the multitasking floating-point support like MicroBotics' StarMath resource.

TURBO_PIXEL ROUTINE

See Listing Four in Part II of this series for the plot_results() function. It colors a row of results from the Mandelbrot or Julia set calculations into the Window.

This function has two basic steps in mapping a row of results from the Mandelbrot set calculations into various colors in an Amiga window. First, an element of the results[] vector is mapped into a color by cycling through all the colors except the first two colors. They are used for the border, with the first color (zero), which is

usually black, used to designate those areas of the Mandelbrot or Julia sets which do not diverge during the maximum number of iterations.

Then, the Amiga's graphics functions SetAPen() and WritePixel() are used to color a particular pixel in the SuperBitMap window. But these functions are quite slow, with pixel writing speeds of less than 2000 pixels per second on an Amiga 2000.

The WritePixel() routine is slow, since it has to take into account the various layers of the display and the Window refresh modes such as SMART_REFRESH. It is especially slow in the case of overlapping windows, since the obscured portions of the Windows are stored in various areas in CHIP memory, and WritePixel() may have to go and find them.

For a SuperBitMap Window there are two BitMaps associated with the Window, the SuperBitMap itself and the BitMap which is used to display the currently visible part of the Window. This is also why so much CHIP memory is required for a SuperBitMap Window. In addition to the BitPlanes for the SuperBitMap, there is a set of BitPlanes which are used for the actual display and are the maximum size of the Window. For example, a 640 x 200 pixel SuperBitMap and a 640 x 200 pixel Window with sixteen colors would have four BitPlanes for the SuperBitMap and four BitPlanes for the Window or a total of eight bitplanes and use 128,000 bytes of CHIP memory.

If the pixel being addressed by the WritePixel() function will appear on the display, the new color is stored in the BitMap of the Window's RastPort (pwind->RPort->BitMap), where the pointer to the Window is pwind. If the pixel is in an obscured portion of the Window, the color is stored in the SuperBitMap (pwind->WLayer->SuperBitMap). Thus, the WritePixel() routine has to check through all the Layers in the display to see that the correct pixel is colored (see Predmore, V4.1, pp101-108 and Robert A. Peck, *Programmer's Guide to the Amiga* for further discussion on BitPlanes and SuperBitMaps).

In the modified version of plot_results(), which is given in Listing One, the operation of mapping those results onto a choice of colors has been left in plot_results() and the actual displaying of these colors is handled by the turbo_pixel() function.

The colors[] vector is passed to the turbo_pixel() function along with a pointer to the SuperBitMap window (pwind), the minimum and maximum values in the colors[] vector to be plotted (nx_min and nx_max) and the row of the SuperBitMap which is being plotted (ny). Actually, the first pixel in the row is nx_min and the last pixel is (nx_max-1) to be compatible with the original plot_results() function.

If nx_min is not a multiple of eight, the miscellaneous pixels from nx_min through the end of that byte (nx_min - nx_min%8 + 7) are colored using the Amiga graphics functions SetAPen() and WritePixel(). Likewise, if nx_max is not a multiple of eight, the extra pixels at the end of the row are written in the same manner. If nx_min is zero or a multiple of eight and nx_max is multiple of eight these parts of the turbo_pixel() function are skipped.

Once the WritePixel() function has been used for the miscellaneous pixels, the new information in the Window's BitMap is copied to the SuperBitMap by freezing the display with LockLayersRom() and then calling SyncSBitMap(). The SyncSBitMap() function updates the SuperBitMap by copying the visible portion of the display to the SuperBitMap (see Eugene P. Morimore's *Amiga Programmer's Handbook* for a discussion of these functions).

The display is kept frozen, while the individual bytes of the SuperBitMap BitPlanes are accessed. Otherwise, portions of the SuperBitMap get scrambled up during window resizing and scroll-

ing since both `turbo_pixel()` and the Layers Library functions could be writing to the SuperBitMap at the same time.

In the `turbo_pixel()` function, the variables `bytesperrow` and `depth` are copied out of the SuperBitMap structures. Pointers to row number `ny` of each BitPlane are calculated and stored in the `planes[]` vector. The variables `pcolor`, `btemp`, `mask`, `j` and `i` are declared as register variables since they occur in the innermost loops of the function and will be accessed the most frequently.

Table Two illustrates the storage of colors in the four BitPlanes of a 16 color BitMap. The table shows the pattern of bits within the first two bytes of a particular row of the BitPlanes. For the purposes of this discussion, I have assumed that the colors are stored in a sequence from 0 to F, where the color numbers are given in hexadecimal. The mask which is used in the `turbo_pixel()` routine is given in binary and the bytes are broken down into their individual bits.

Table Two: Color Storage in BitPlanes

		Color Number in Hexidecimal															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
BitPlane	Mask	Byte 0								Byte 1							
0	0001	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
1	0010	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
2	0100	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
3	1000	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

The left most pixel in each byte is stored in the highest order bit (0x80 in hexadecimal) and the right most pixel is in the low order bit (0x01). For a given color, its lowest order bit is stored in BitPlane zero, the next higher bit in BitPlane one, and so forth.

Thus, the job of `turbo_pixel()` is to take the individual bits of each color and put them into the BitPlanes. First, within the `i` loop, the pointer `pcolor` is set to the beginning of a block of eight colors which will be put into one byte in each BitPlane.

Next, the `j` loop goes through all the BitPlanes. For BitPlane zero, the mask is set to 0x01. The mask for the other BitPlanes is given in Table Two. A temporary storage variable, `btemp`, is set to zero, then the eight colors are ANDed with the mask. If the AND operation is TRUE, the appropriate bit is set in `btemp` by an OR operation. The result value for `btemp` is then stored in the BitPlane.

This continues for each of the BitPlanes, using the same set of eight colors. Then, the next set of eight colors is processed by incrementing `i`, until the entire row has been put into the SuperBitMap.

Finally, the updated SuperBitMap is copied into the Window RastPort with `CopySBitMap()` and the Layers are thawed with `UnlockLayerRom()`.

Table Three compares the speed of the `turbo_pixel()` and `WritePixel()` functions. The first two timings were done on a test program which wrote predetermined colors into a SuperBitMap Window. For this simple case `turbo_pixel()` is 730 percent faster than `WritePixel()`. For a display of 640 x 200 pixels, or a total of

Table Three: Pixel Writing Timings

Description (Pixels/sec)	Speed	Ratio
Test program using <code>turbo_pixel()</code>	11,600	7.3
Test program using <code>WritePixel()</code>	1,600	
Mandelbrot program using <code>turbo_pixel()</code>	3,600	3.3
Mandelbrot program using <code>WritePixel()</code>	1,100	

128,000 pixels, `turbo_pixel()` would fill it in 11 seconds as compared to 80 seconds for the standard `WritePixel()` routine.

When `turbo_pixel()` is used with the Mandelbrot program, there is only an improvement factor of 330 percent, since the overhead of mapping of the results[] vector into the colors[] vector has to be done in both cases. For a 640 x 200 pixel display, the time for `turbo_pixel()` is 36 seconds as compared to 116 seconds for `WritePixel()`.

A drawback is that `turbo_pixel()` can only be used on SuperBitMap Windows. A SuperBitMap is isolated from the complexities of obscured Windows and allows the relatively simple `turbo_pixel()` function to be used.

DEBUGGING THE '881

As part of the work on these articles, I have developed two assembly language functions, `store_881()` and `print_881()`. They are useful in debugging programs which utilize the MC68881 math co-processor. The function `store_881(n, x)` moves the double precision number `x` into the internal floating point register `n` of the '881. The function `print_881()` prints out all eight internal floating point registers of the '881.

The ANSI C prototypes for these functions are:

```
void store_881(int n, double x) and
```

```
void print_881()
```

They can be called by C programs, or executed while using the Manx Aztec C source level debugger SDB. They only have to be included in the final linkage of object modules. An example makefile which does this is given in Listing Six.

As is my usual style, I developed the framework for the functions in C. The C language versions for these functions are given in Listings Two and Four for `store_881.c` and `print_881.c` respectively. The original Assembler versions were derived from these listings with the Manx Aztec C68K/Am 3.6 compiler by using the following command lines:

```
cc +fi -a -n -t store_881.c
and
cc +fi -a -n -t print_881.c
```

For `store_881.c`, I used a switch statement and eight cases from zero to seven for the permissible values of `n`. The default for the switch statement is to return with no action.

In the Assembly language version, in `store_881.asm`, which is shown in Listing Three here, the number `x` is pulled off the stack and stored in the 68000 registers D0 and D1 with the following instructions:

```
move.l 10(a5),d0
move.l 14(a5),d1
```

Then, the '881 macro

```
PROC D0D1toFPN fmove,fpn
```

which was discussed in Part I of this series, is used to store `x` in the appropriate '881 register.

Other changes which were made to the original version of `store_881.asm` were:

```
include MC68881.i
```


where, the MC68881.i file was given in Listing Four of Part I (Predmore, V4.3, pp.74-75), and the macros:

```
STARTUP_881
and
SHUTDOWN_881
```

are added to the program segment, and

```
public_MC68881_BASE
```

is added to the data segment, DSEG, at the end of the assembly listing.

The print_881.c listing (Listing Four here) defines eight dummy variables fp0 through fp7 to simulate the eight internal registers of the '881. The function prints out a header using the puts() function and then prints out the eight dummy variables in pairs.

The print_881O function, which shown given in print_881.asm (Listing Fiver here), moves the '881 registers to the D0/D1 registers of the 68000 processor with the macro

```
PROCFPntoD0D1 fmove,fpn
```

and then pushes the number onto the stack. Since two of the floating point registers are printed on each line, a second floating point number is moved from the '881 and also pushed onto the stack before calling printf(). Note that the second number is pushed onto the stack first. For example, fp1 is moved onto the stack via D0/D1 before fp0. Also the low order portion (32-bit long word), which is in D1, is pushed onto the stack before D0.

The Manx Aztec C compiler output for the format strings such as

```
"fp0=%23.15e fp1=%23.15e\n"
```

is a series of decimal numbers at label .1, etc. The define constant directive with a byte size option is DC.B. The constants which are being defined can either be a list of numerical values, a character string enclosed in quotes, or a combination of these two possibilities. For clarity, I have rewritten these as strings plus the decimal number ten for the newline command (\n).


Note that, since fp0 is used by the math libraries, which are called by printf(), this register is not useable as a register variable in any of the MC68881 assembler routines. This is noticeable when print_881O is called several times in a row from SDB.

This concludes my series on the MC68881. I am glad to have had the opportunity to share some of what I have learned about this fascinating device.

REFERENCES

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4. Read Predmore, "Scrolling Through SuperBitMap Windows", *Amazing Computing* (January 1989, V4.1): pp. 101-108.

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5. Robert A. Peck, *Programmer's Guide to the Amiga* (Berkeley, California: SYBEX, 1987).
6. Eugene P. Mortimore, *Amiga Programmer's Handbook* (Berkeley, California: SYBEX, 1986).

Listing One

```
/*===== PLOT_RESULTS.C =====*/
*
* Copyright (C) 1989 by Read Predmore
*
* 13 October 1989 @ 20:06
*/

#include "mandel.h"
void turbo_pixel();

/*===== PLOT_RESULTS =====*/
void
plot_results(pwind, results, max_iter, nx_min, nx_max, ny)
struct Window *pwind;
unsigned short *results, max_iter, nx_min, nx_max, ny;
{
    register unsigned short i, nx;
    unsigned short ncolors;
    static unsigned short colors[SBM_WIDTH];

    /* Subtract 2 since colors 0 and 1 are not used except
       the color is zero when:
       results[] = max_iter
    */
    ncolors = (1 << pwind->RPort->BitMap->Depth) - 2;

    for(nx=nx_min; nx<nx_max; nx++)
    {
        i = results[nx];
        if(i==max_iter)
            colors[nx] = 0L;
    }
}
```


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```

else
    colors[nx] = i % ncolors + 2L;
}
turbo_pixel(pwind, colors, nx_min, nx_max, ny);
}
/*===== < TURBO_PIXEL > =====*/
void
turbo_pixel(pwind, colors, nx_min, nx_max, ny)
struct Window *pwind;
unsigned short colors[], nx_min, nx_max, ny;
{
    register USHORT *pcolor;
    register UBYTE mask, btemp;
    register USHORT j, i;
    USHORT imin, imax;
    UWORD bytesperrow, depth;
    PLANEPTR planes[8];

    bytesperrow = pwind->WLayer->SuperBitMap->BytesPerRow;
    depth = pwind->WLayer->SuperBitMap->Depth;

    for(j=0; j<depth; j++)
        planes[j] = pwind->WLayer->SuperBitMap->Planes[j] +
            bytesperrow * ny;

    /* Write miscellaneous pixels at beginning & end of row. */
    if( (j = nx_min%8) != 0)
        for(i=nx_min; i<nx_min-j+8; i++)
            { SetAPen(pwind->RPort, (long) colors[i]);
              WritePixel(pwind->RPort, (long) i, (long) ny);
            }
    if( (j = nx_max%8) != 0)
        for(i=nx_max-j; i<nx_max; i++)
            { SetAPen(pwind->RPort, (long) colors[i]);
              WritePixel(pwind->RPort, (long) i, (long) ny);
            }
    LockLayerRom(pwind->WLayer);
    SyncSBitMap(pwind->WLayer);

    imin = (nx_min+7)/8;
    imax = (nx_max)/8;
    for(i=imin; i<imax; i++)

```

```

{
    pcolor = &colors[8*i];
    for(j=0; j<depth; j++)
    {
        mask = 1<<j;
        btemp = 0;
        if(pcolor[0] & mask)
            btemp |= 0x80;
        if(pcolor[1] & mask)
            btemp |= 0x40;
        if(pcolor[2] & mask)
            btemp |= 0x20;
        if(pcolor[3] & mask)
            btemp |= 0x10;
        if(pcolor[4] & mask)
            btemp |= 0x08;
        if(pcolor[5] & mask)
            btemp |= 0x04;
        if(pcolor[6] & mask)
            btemp |= 0x02;
        if(pcolor[7] & mask)
            btemp |= 0x01;

        *(planes[j]+i) = btemp;
    }
}
CopySBitMap(pwind->WLayer);
UnlockLayerRom(pwind->WLayer);
}
/*===== < FINI > =====*/

```

Listing Two

```

/*===== < STORE_881.C > =====
*
* Copyright (C) 1989 by Read Predmore
* 10 September 1989 @ 10:43
*/
/*===== < STORE_881 > =====*/
void
store_881(n, x)
int n;
double x;
{
    register double fp0, fp1, fp2, fp3, fp4, fp5, fp6, fp7;
    switch(n)
    {
        case 0:
            fp0 = x;
            break;
        case 1:
            fp1 = x;
            break;
        case 2:
            fp2 = x;
            break;
        case 3:
            fp3 = x;
            break;
        case 4:
            fp4 = x;
            break;
        case 5:
            fp5 = x;
            break;
        case 6:
            fp6 = x;
            break;
        case 7:
            fp7 = x;
            break;
        default:
            break;
    }
}

```

Listing Three

```

/*===== < STORE_881.ASM > =====
*
* Copyright (C) 1989 by Read Predmore
* 10 September 1989 @ 10:46
*/
/*===== < STORE_881 > =====*/
void
store_881(n, x)
int n;
# 8 'store_881.c' 362178695
^l .3

```



```

public      _store_881
_store_881:
    link     a5,#2
    movem.l  .4,-(sp)
;double x;
;{
    register double fp0,fp1,fp2,fp3,fp4,fp5,fp6,fp7;
;    switch(n)
~ fp7 -48 "d"
~ fp6 -40 "d"
~ fp5 -32 "d"
~ fp4 -24 "d"
~ fp3 -16 "d"
~ fp2 -8 "d"
~ fp1 d6 "d"
~ fp0 d4 "d"
~~ n 8 "i"
~~ x 10 "d"

include     MC68881.i
SETUP_881           ; Setup for MC68881 math

^^^^ move.w      8(a5),d0
    ext.l  d0
    bra    .5
;
;    case 0:
^7
;        fp0 = x;
^ move.l      10(a5),d0
    move.l   14(a5),d1
    PROCD0D1toFPN fmove,fp0
;        break;
^ bra        .6
;    case 1:
^8
;        fp1 = x;
^ move.l      10(a5),d0
    move.l   14(a5),d1
    PROCD0D1toFPN fmove,fp1
;        break;
^ bra        .6
;    case 2:
^9
;        fp2 = x;
^ move.l      10(a5),d0
    move.l   14(a5),d1
    PROCD0D1toFPN fmove,fp2
;        break;
^ bra        .6
;    case 3:
^10
;        fp3 = x;
^ move.l      10(a5),d0
    move.l   14(a5),d1
    PROCD0D1toFPN fmove,fp3
;        break;
^ bra        .6
;    case 4:
^11
;        fp4 = x;
^ move.l      10(a5),d0
    move.l   14(a5),d1
    PROCD0D1toFPN fmove,fp4
;        break;
^ bra        .6
;    case 5:
^12
;        fp5 = x;
^ move.l      10(a5),d0
    move.l   14(a5),d1
    PROCD0D1toFPN fmove,fp5
;        break;
^ bra        .6
;    case 6:
^13
;        fp6 = x;
^ move.l      10(a5),d0
    move.l   14(a5),d1
    PROCD0D1toFPN fmove,fp6
;        break;
^ bra        .6
;    case 7:
^14
;        fp7 = x;
^ move.l      10(a5),d0
    move.l   14(a5),d1

```

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```

    PROCD0D1toFPN fmove,fp7
;        break;
^ bra        .6
;    default:
^15
;        break;
^ bra        .6
;    }
^16
    dc.w      .7-.17-2
    dc.w      .8-.17-2
    dc.w      .9-.17-2
    dc.w      .10-.17-2
    dc.w      .11-.17-2
    dc.w      .12-.17-2
    dc.w      .13-.17-2
    dc.w      .14-.17-2
.5
    cmp.l     #8,d0
    bcc       .15
    asl.l     #1,d0
    move.w    .16(pc,d0.w),d0
.17
    jmp       (pc,d0.w)
.6
; }
^18

SHUTDOWN_881

    movem.l  (sp)+,.4
    unlk     a5
    rts
.2 equ      -4
.4 reg      d0/d1
.3
# 42
|
~ _store_881 * "{v"
    public   .begin
    dseg
    public   _MC68881_BASE
    end

```


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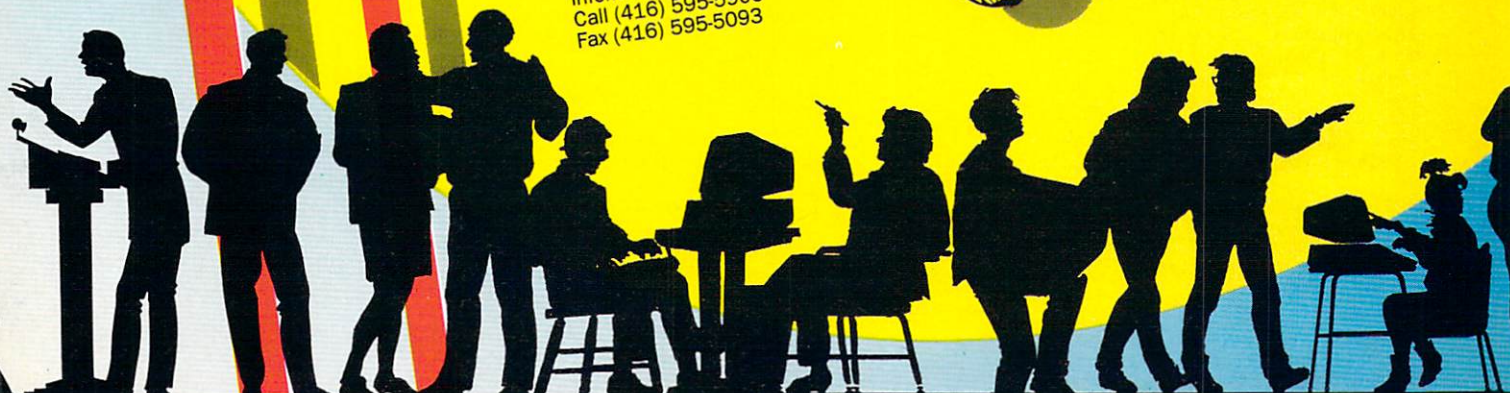
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Listing Four

```

)=====< PRINT_881.C >=====
*
* Copyright (C) 1989 by Read Predmore
* 15 October 1989 @ 17:09
*/
/*=====< PRINT_881 >=====
void
print_881()
{
    register double fp0,fp1,fp2,fp3,fp4,fp5,fp6,fp7;
    puts( " MC68881 Floating Point Registers");
    printf("fp0=%25.15e fp1=%25.15e\n", fp0,fp1);
    printf("fp2=%25.15e fp3=%25.15e\n", fp2,fp3);
    printf("fp4=%25.15e fp5=%25.15e\n", fp4,fp5);
    printf("fp6=%25.15e fp7=%25.15e\n", fp6,fp7);
}
/*=====< PRINT_881.ASM >=====
;
; *
; * Copyright (C) 1989 by Read Predmore
; * 15 October 1989 @ 17:28
; */
; /*=====< PRINT_881
>=====*/
;void
;print_881()
;{
;# 8 'print_881.c' 359723103
;^|.3
;    public    _print_881
;_print_881:
;    link      a5,#.2
;    movem.l   .4,-(sp)
;    double    fp0,fp1,fp2,fp3,fp4,fp5,fp6,fp7;
;    puts( " MC68881 Floating Point Registers");
;
;~ fp7 -64 "d"
;~ fp6 -56 "d"
;~ fp5 -48 "d"
;~ fp4 -40 "d"
;~ fp3 -32 "d"
;~ fp2 -24 "d"
;~ fp1 -16 "d"
;~ fp0 -8 "d"
;
;include MC68881.i
;SETUP_881 ; Setup for MC68881 math
^^
;    pea .1
;    jsr _puts
;    add.w #4,sp
;    printf("fp0=%23.15e fp1=%23.15e\n", fp0,fp1);
;
;    PROCFPNtoD0D1 fmove,fp1
;    move.l d1,-(sp)
;    move.l d0,-(sp)
;    PROCFPNtoD0D1 fmove,fp0
;    move.l d1,-(sp)
;    move.l d0,-(sp)
;    pea .6
;    jsr _printf
;    lea 20(sp),sp
;    printf("fp2=%23.15e fp3=%23.15e\n", fp2,fp3);
;
;    PROCFPNtoD0D1 fmove,fp3
;    move.l d1,-(sp)
;    move.l d0,-(sp)
;    PROCFPNtoD0D1 fmove,fp2
;    move.l d1,-(sp)
;    move.l d0,-(sp)
;    pea .7
;    jsr _printf
;    lea 20(sp),sp
;    printf("fp4=%23.15e fp5=%23.15e\n", fp4,fp5);
;
;    PROCFPNtoD0D1 fmove,fp5
;    move.l d1,-(sp)
;    move.l d0,-(sp)
;    PROCFPNtoD0D1 fmove,fp4
;    move.l d1,-(sp)
;    move.l d0,-(sp)
;    pea .8
;    jsr _printf
;    lea 20(sp),sp
;    printf("fp6=%23.15e fp7=%23.15e\n", fp6,fp7);

```

```

PROCFPNtoD0D1 fmove,fp7
move.l d1,-(sp)
move.l d0,-(sp)
PROCFPNtoD0D1 fmove,fp6
move.l d1,-(sp)
move.l d0,-(sp)
pea .9
jsr _printf
lea 20(sp),sp
;
^5

SHUTDOWN_881

movem.l (sp)+,.4
unlk a5
rts
.2 equ -64
.4 reg d0-d1,a0-a1
.3
.1
dc.b " MC68881 Floating Point Registers",0
.6 dc.b "fp0=%23.15e fp1=%23.15e",10,0
.7 dc.b "fp2=%23.15e fp3=%23.15e",10,0
.8 dc.b "fp4=%23.15e fp5=%23.15e",10,0
.9 dc.b "fp6=%23.15e fp7=%23.15e",10,0
ds 0
# 16
|
~_printf * "{i"
~_puts * "{i"
~_print_881 * "{v"
public _printf
public _puts
public .begin
dseg
public _MC68881_BASE
end
#####
#
# Makefile to build Mandel_881
# using Aztec C V3.6a for the AMIGA,
#
# by Read Predmore,
#
# 27 March 1989 @ 16:13
#
#####
CFLAGS= +Imand_h +FI -L60 -N
OBJ$ 881 = mand_881.o mandsubs.o plot_results.o \
        calc_dble.o calc_881.o print_881.o store_881.o
INCL = mandel.h mand_globals.h
Mandel_881: $(OBJ$ 881) mand_h
ln -g -o Mandel_881 $(OBJ$ 881) -lmt -lc
mand_881.o: mand_881.c mand_h
cc $(CFLAGS) mand_881.c
mandsubs.o: mandsubs.c mand_h
cc $(CFLAGS) mandsubs.c
calc_dble.o: calc_dble.c
cc $(CFLAGS) calc_dble.c
plot_results.o: plot_results.c mand_h
cc $(CFLAGS) plot_results.c
mand_h: mandel.h
cc +Hmand_h -a -n -s mandel.h
calc_881.o: calc_881.asm MC68881.i
as calc_881.asm
print_881.o: print_881.asm MC68881.i
as print_881.asm
store_881.o: store_881.asm MC68881.i
as store_881.asm
wind->WLayer);
}
/*===== < FINI > =====*/

```


The Command Line

by Rich Falconburg

IF YOU OWN MORE THAN ONE AMIGA, YOU know the difficulty of sharing common information and programs between your machines. That's where this month's column comes in. If you are willing to do a little footwork, then read on.

In the modern office environment there is usually a cluster of computers, with each having the need to access common information.

Enter "networking".

This term describes a means of connecting two or more computers with a common communications link. The earliest network for most personal computers was the functional but very inefficient "Sneakernet". When someone across the room or on another floor needed a certain file, the only option was to copy the file to a floppy and bring it to the other machine. Very annoying.

That's all changed now, of course, thanks to the various networking protocols implemented in the personal computer environment. One method used as an alternative to floppies before networks became commonplace was simple serial port communication links. This is still in very effective operation, in the form of dial-up information services. Some users tried early on to effect the same link between machines without the modems and found that, although it worked, the time required to load up

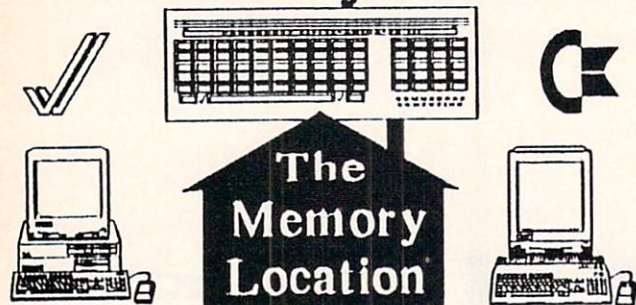
a terminal program on both machines and transfer the file was often far slower than the disk exchange route.

NETWORKS

The obvious solution would be to have some way to send or retrieve the information without interrupting work in progress, and to transfer it at the highest rate possible. Even if this can be achieved, there is still the difficult task of insuring that the changes appear everywhere each time a user alters a commonly used file accessed by all. If an altered file is not sent back to the originator, discrepancies will arise, creating even bigger headaches. This is still true of the "Sneakernet" approach, as well as many standard network operations, and can absorb a significant amount of administrative overhead for the network manager.

So, what's the answer? Sun Microsystems has an innovative tool for use in their networking applications that helps address this issue. They call it the Network File System, or NFS™. Its purpose: to allow various "nodes" on the network (a node is a computer or terminal capable of accessing the network) to mount a given volume of a remote system and use it as though it is a volume on the user's own local system. A volume can be a directory, or an entire disk drive. Access to such a volume occurs just as if

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it is your own disk drive, allowing you to perform all standard operations as they normally would occur.

The system containing all the files, ostensibly called a "file server", is generally one with several large capacity disk drives and more computing horsepower. Other systems that connect to it and use it for file storage and retrieval are called "clients" (or nodes).

The advantage here is twofold. One, the file does not take up physical space on the client machines. Two, because the volume may be mounted by any authorized system on the network running the NFS software, only one copy of the file is necessary. Later improvements to the NFS software have provided various security and file-locking techniques to limit access and eliminate conflicts.

This networking solution will be available for the Amiga soon, and not a moment too soon. If you have limited resources and would like to experience this very powerful application, then the software may be as close as your nearest User Group or Bulletin Board System (or Fred Fish disk). However, if you are running a production shop, require high-speed operations, have several hundred dollars per machine to invest, and don't have time to wrestle with establishing initial connections, the solution I'll be discussing here may not apply to you. I recommend a full implementation of TCP/IP and NFS with an XNS hardware connection.

We're going to follow the old serial port route but with some major differences. First of all, we can handle the interruption problem very easily, because we own a more advanced computer. While it's true that using the serial port limits us to a single physical connection, this too can be overcome through the use of a multi-

port card to create more serial ports. As for the wire between the machines, a simple unshielded three-wire connection will suffice. I've used a 50-foot connection at 19,200 baud for some time with no problems.

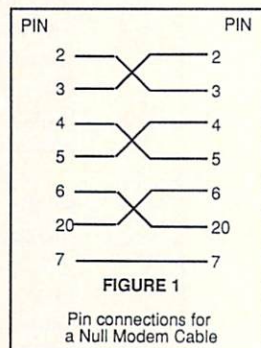
POWER FOR THE PUBLIC

Some time ago Matthew Dillon wrote some powerful communication-linking software he dubbed DNet [available on Fred Fish disk #294]. It was designed to allow flexible communication paths between two computers, typically an Amiga and a UNIX system or an Amiga-to-Amiga link. Some of the software's capabilities include:

- Allowing two Amigas to communicate via multiple channels.
- Complete server and client support at each end, which allows for the sending and receiving of files, terminal communication, BBS-style support, and more (all at the same time if you wish).
- Complete modem support, including a special start-up configuration file.
- Support for different devices (additional serial or parallel ports, etc.).
- Command-line switches to set operating modes.

With version 2.10 Matt added Xon/Xoff and 7-bit support. If you have been trying to get an older version of DNet to work and have been having difficulty getting the computers to recognize each other, it's probably because of the lack of a full-fledged modem connection. Earlier versions supported only the 7WIRE mode on the serial port, meaning that you were not able to communicate unless DTR/DSR and RTS/CTS were also properly connected.

For local operation (no modems), this requires a null modem cable (see Figure One). What's the advantage of using hardware handshaking? Depending on your configuration, speed. Technically, the Amiga hardware can handle baud rates up to 292,000. In practice, you may discover that 56K baud is the maximum reliable speed you may use. The key here is experimentation. I've seen notes stating that 9600 baud was the best speed that could be reliably achieved. With the 7WIRE connection, the hardware will be responsible for the handshaking and should make it possible to use baud rates over 19.2K. Interlaced displays and heavy system usage will limit the maximum usable baud rate. Again, experiment. For those who choose to try the 7WIRE method, I have found the following start-up parameters to work well:



`DNET -X -P2 -m0 -Z0 -b57600` (choose your own baud rate)

The new release solves this problem by providing a command-line switch that selects one mode or the other. Now, if you're not using a modem, a simple three-wire connection will work. My 19.2 K baud connection is established with the following command:

`DNET -X -P1 -Z0 -m0 -b19200`

This sets manual control, Xon/Xoff mode, no parity, 8-bits, and 19,200 baud. This command line is entered at both machines. DNet then opens a small window and creates a pull-down menu that provides selections to Send Break, Start DNet, and Quit. An Fterm window (simple terminal) is started by default. It is not really needed for an Amiga-to-Amiga connection. It is possible to prevent this from being started when DNet is run, but I've not had any success in establishing a connection without it.

However, closing the window after the connection is established seems to have no ill effects. With the latest version I've found it necessary to wake up the connection by pressing a few keys or sending a Break sequence at one of the machines *before* selecting Start from the menu, something it didn't do in previous versions.

The current method limits DNet's usefulness as a transport protocol. One should be able to start the network from scripts. Transparent operation is the key. Included with the DNet package are a number of server programs and the client programs that use them. DNet uses a list of server programs that it can run to manipulate the resources that a client needs.

For example, when a user requests that a file be transferred, the remote system starts the appropriate server program to accomplish the task. Because each Amiga may be a server, files may be easily requested or sent from either end. DNet includes the ability to specify multiple network ID numbers, which allows you to establish up to 64 separate virtual connections. So you can send a file, receive a file, and communicate via a terminal window—all at the same time. There is also extensive support for user privileges that can be set individually and recognized by the BBS server. Dillon still has some work left to do on this, including the addition of EMAIL support, but the BBS is usable in its current state.

Here's a list of all of the switches that may be set via the command line:

DialOutMode: With this set (the default) DNET looks for a message from your modem and sets the baud rate according to the values in the configuration file.

X: This mode allows manual control and, if Carrier is being sensed, modifies the baud rate appropriately.

a: This is the Auto answer mode; it resets the modem to the original speed when the carrier is lost.

8: Forces 8 bits, no parity for the initial window.

b: Defines baud rate (defaults to Preferences setting).

B: Defines the baud rate to use for timeouts (defaults to the current baud rate). This is useful for those multiple network links that slow the initial connection time to a crawl.

s"client": This should be the name of the client program that will start as soon as a connection is made.

h1: Sets Carrier detect on.

U#: Defines the unit number of the low-level serial link to use.

D"device": Defines the device name of the serial link to use.

N#: Defines the network ID.

p: Packet debug mode.

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d: Debug mode on.

m0: Sets 8-bit packet mode. Default is 7 bits.

Pn: Defines the hardware link used where n = 0 = none, 1 = Xon/Xoff, 2 = 7WIRE (default is set by Preferences).

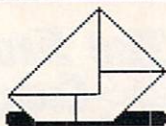
Zn: Defines Parity where n = 0 or 8 = no parity, 1 = 7 bits/odd, 2 = 7 bits/even, 3 = 7 bits/mark, 4 = 7 bits/space (default set by Preferences).

This software works great as the link protocol it is designed to be and, because of some strong support software developed by The Software Distillery, it is now a powerful networking tool. John Toebes and Doug Walker have written a network handler that provides the same functionality of NFS.

Once installed a new device, called NET:, is available. This device uses a handler that currently depends on DNet as the communication link. To use the network handler one must first mount the NET: device. A logical called ROOT: must be assigned on the remote machine so that the handler knows which file system to use. I have been using a 512K A1000 as the client and a 3 meg A2000 as the server. I use the following script to establish the connection:

```
# Amiga 1000 SKSh Network startup file
# rf 1990
echo -n "\n\nConnecting to the Amiga 2000.\n\nPlease wait"
netclock
```


MOVING?



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```
Mount NET:
path -add NET:FOO NET:FOO/C NET:FOO/UTILITIES NET:FOO/SYSTEM
assign HOST: NET:FOO
assign c: HOST:C
echo "\n\nThe remote disk is mounted and available as HOST:\n"
netmount NET: GRAPHICS VIDEO:
assign FunPAINT: NET:GRAPHICS/PAINT
assign BRUSH: FunPAINT:BRUSH
assign PICS: FunPAINT:PICS
assign GAMES: NET:GRAPHICS/GAMES
assign USER1: NET:GRAPHICS/USER1_DIR
assign USER2: NET:GRAPHICS/USER2_DIR
echo "\n\nConnection established and logicals assigned.\n"
```

The netclock program is another jewel from The Software Distillery and precludes setting the clock manually. It sets the system clock on the Amiga 1000 from the system clock on the A2000. Very Nice!

Why Foo? Beats me. It's a favorite name programmers use simply for lack of anything else. To reduce confusion, it probably should have been called Root—or better still, the actual name of the volume. At any rate, if you check the contents of NET:, this is the name you will see. It is the same device that the ROOT: logical points to. Mine is assigned to SYS: and allows me to dispense with the Workbench disk in the A1000. I only reassign the command directory to prevent disasters.

Once the volume is mounted in this way, the local (client) node sees that volume as its own. You can copy to or from it, rename files, edit files, delete files, execute and run files, as though all are on your local machine. This is where the fun begins! When you run a program that is on the server, the network handler copies

the program to the client first, then runs it on the client. This works great as long as you have enough memory to run the program in question. Transferring files this way is also a breeze. Since the mounted volume is seen as a local device, a simple copy from the source directory to the destination directory is all that is required. The file transfer operation is completely transparent to the user, exactly the capability that NFS provides.

The latest DNet distribution package also comes with an nfs-handler, but there is no documentation on it, and when I tried simply mounting an NFS device (after creating an entry in the mountlist that uses the handler), all I got was an error message stating that the packet type was unknown.

The NetMount command is part of the network handler software and allows you to mount other devices or partitions in addition to the default provided by the ROOT: assignment. You may mount as many volumes as you wish. With DNet's support of multiple serial devices and the availability of multi-port boards, this software quickly becomes a low-cost alternative for networking. The advertised prices for the network cards available from Commodore are very attractive, but you still need to install one in each machine you intend to connect to the network. Add to this the cost of the support software required, and the DNet / NET: combination looks very attractive. DNET can be difficult to get going at first but if you are willing to work with it, you may find it to be just what you have been looking for.

GLOSSARY OF TERMS

- Client:** A computer that uses resources provided by another machine on a network.
- File Locking:** A mechanism to prevent more than one user writing to the same file.
- Protocol:** A set of conventions that governs how machines on a network communicate with each other.
- Remote:** Systems and devices that are not attached to your machine.
- Server:** A machine that provides resources to other computers on a network.

LETTERS

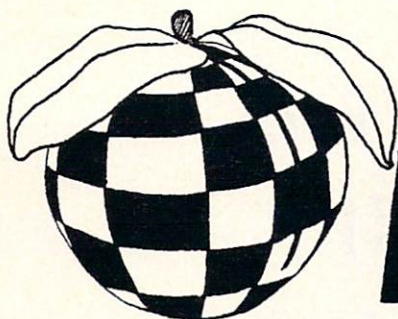
Rick Mockler of Melrose, MA asks if there is a sequence to place files on the Workbench disk so that the start-up time is reduced. This can be done, but there may be an even better way. DOSKWIK (Fred Fish disk #129) by Gary Kemper is a utility that will save and load an image of directories as a single file. Used to copy the needed files to RAM: for start-ups, you can easily halve the time it takes your Amiga to boot.

He also asked about other uses for Pipes. How about this one:

```
LIST | SEARCH <object>
      or
ls | grep <object>
```

where <object> is a date or other value to limit the listing.

I'll see if I can come up with some more.



AMIGA DEVCON'90

by Ernest P. Viveiros, Jr.

ATLANTA. THE CRADLE OF THIS COUNTRY'S CIVIL RIGHTS MOVEMENT. A PLACE where the hopes and dreams of many commingle with the sweat and tears of many more. A fascinating city where the Old South, and an exciting New Age of development, meet.

In the midst of this excitement—sparked anew by Nelson Mandela's stirring speech at Georgia Tech, and the arrival of the NBA Atlanta Hawks' first-round draft pick, Rumeal Robinson—a group of Amiga developers met recently to discuss important (and confidential) technical and marketing topics. The 1990 North American Amiga Developers Conference, held at the Omni Hotel at CNN Center (a place of wonder in itself), created an environment which left developers feeling inspired, invigorated and confident about the future, and the Amiga.

After signing in at the registration table and receiving conference notes (which, by the way, were supplied in an attractive binder over four inches thick), attendees gathered to hear the keynote address of Jeff Scherb, Vice President of Commodore Application & Technical Support (CATS).

Mr. Scherb delivered a brief welcome, then addressed an issue of great importance to anyone interested in the future of the Amiga—the CATS' evangelical mission. He stated that it is CATS' mission to "ensure the success of the Amiga computer by providing the application software that is required by Commodore's target markets."

The three keys to accomplishing that mission, according to Mr. Scherb, are: bring big-name software to the Amiga, fill holes in the market, and enhance and fix current software.

Of course, attraction of big-name software to the market will give the Amiga the business applications that top corporations require. However, in addressing the concerns and livelihoods of the smaller, independent software developers at the Conference, Mr. Scherb stressed that it is still important to have software that is

unique to the Amiga, since it's these packages that bring out the best in the machine.

Jeff was followed by Commodore Business Machines President Harold Copperman, who spoke about future technology and marketing strategies planned for Amiga computers. After a short break, it was time for the technical sessions.

To kick off the technical sessions, Jeff Porter, Director of Development-Commodore Technology, introduced the Amiga 3000 to the developer community. He was followed by Andy Finkel, who introduced the new AmigaDOS release 2.0, and David Berezowski, who introduced the sharp-looking Workbench 2.0. Other AmigaDOS topics included New DOS calls and Low-Level DOS.

With the new AmigaDOS 2.0 and Workbench 2.0 come lots of new philosophies and techniques, standards, and compatibility problems. To help developers conform, sessions included topics such as Preferences 2.0, Commodities, Exec 2.0, Intuition, GadTools, boopsi, and more. It was nearly enough information to fry your brain (!) ...but well worth it. The Amiga has got some very smooth software coming.

Another important set of sessions was devoted to the development of net-

working software for the Amiga. Commodore recognizes that network ability (with other vendors) is a key to getting the Amiga sold in the corporate marketplace. To help the developers and give them some insight, sessions included TCP/IP, Novell Networks, and Commodore Ethernet and Arcnet cards.

Sessions for the hardware types (who were there in force) covered some existing products as well as the brand-new A3000 hardware and Zorro III technology. These sessions included A500/A1000/A2000 Peripheral Design, A3000 System Architecture, The A3000 Expansion Bus, Designing a Zorro III Plug-in-Card, and the A3000 Expansion Slot. Most of these sessions were conducted by members of the A3000 design team.

The hottest topic in Atlanta was the introduction of CDTV (Commodore Dynamic Total Vision) to the developer community. Much of the information about CDTV is still sensitive, but developer's sessions did include CDTV Software Design, The CDTV Development Environment, and Publishing and Selling CD-ROM Software. I can tell you that most of the porting will be easy for developers. This is a hot appliance, and you should see it in the stores before Christmas (with lots of software to boot!).

Many other miscellaneous topics were covered, with a few marketing sessions tossed in as well. There was something for everyone in the Amiga developer's community. Most people left exhausted, but with many fresh new ideas. Three days is definitely not enough time to consume all the information ... more like a week would be better. But then—that would cut into coding time.

•AC•

APL & THE AMIGA

by Henry T. Lippert, Ed.D.

•

*Multitasking is
super easy. Full
screen editing,
program
execution, and
terminal
emulation in
simultaneous
independent
sessions are easy.*

•

IT IS OFTEN SAID THAT PORTING programs from other computers to the Amiga results in poor quality products when compared with programs designed with the Amiga in mind.

Of course, this happens because the Amiga has much greater capabilities that cannot be reached by programs designed for lesser machines. Just the opposite has happened with the port of APL to the Amiga. APL for the Amiga is the same APL68000 that runs on all the MC68000 based computers. It is improved over some other APL systems because the Amiga has features that make this version unique in delightful ways.

Multitasking is super easy. Full screen editing, program execution, and terminal emulation in simultaneous independent sessions are easy. The file system is also very easy. The use of color and sound is easy. Windowing with pull-down menus and requester windows are easy.

The only thing we don't get with APL on the Amiga is multiple users, multiple **uses** with the multitasking yes, but not multiple **users**. All those people with ordinary computers (such as the PC and the 286 types) have to be content with multiple **users** but without multitasking they cannot be signed on as multiple users since those boring machines only do one thing at a time. Should you be getting the impression that APL is easy to use and is a powerful language on the Amiga, let's hope so.

It is ironic, what some have declared to be a hopelessly complex language at first glance, turns out to be the easiest language of all for those of us who are not professional programmers. APL also provides easy control over the extended capabilities of the Amiga. It does so through the extra workspaces supplied with your purchase of APL. There are nine workspaces that contain these functions that make it easy to control all the extended and unique features of the Amiga.

One of the advantages of knowing APL is that it runs on nearly every computer. The APL language itself is the same across all computers. Not every computer owner buys APL, however, so it won't quite make it as a universal language.

As promised, let's do some statistics. First, let's make a simple edit to our program, titled "Average." As you probably remember, our program that we called Average is really the computation of a specific average, the arithmetic mean. It is easy to change the name by opening the function for editing:

```
▽ AVERAGE  
[2] [0] R ← MEAN X ▽
```

We simply re-indexed the line to line zero and replaced the header by retyping it. We could also have performed the same edit by indexing line zero as we opened the function for editing, as follows:

```
▽ AVERAGE [0]  
[0] R ← MEAN X ▽
```


In each case we simply replaced the header of the program by re-indexing to line zero and replacing the old line with the new line. Recall that when we explained the writing of a function we read the upside down delta as "stop immediate execution, edit if it exists, or define a program..." Since the function already existed with the name used, it was opened for editing.

This little taste of function editing was easy enough. However, APL on the Amiga has a much easier to use full screen editor that allows use of the mouse and cursor to access any part of the function and make any changes desired. When it is given back to APL, it is in a WYSIWYG (What You See Is What You Get) fashion. APL editing has always been WYSIWYG, long before it was known as WYSIWYG!

In statistics, the standard deviation (SD) is a companion measure to the arithmetic mean. It is used to describe the spread of a set of numbers. Let's generate a set of random numbers:

```
NUMBERS ← ?1000 p100
```

(You should have automatically read "numbers specified by random numbers drawn from 1,000 reshaped 100s.")

In order to compute the SD, we need to compute what is called the variance, a measure that is the summed, squared deviation of each observation from the mean, divided by the number of observations. Let's take it one step at a time. First the APL statement and then a comment line explaining each:

```
MEAN NUMBERS
```

```
⌈ call our function and compute the mean
of the 1000 numbers
```

```
NUMBERS - MEAN NUMBERS
```

```
⌈ subtract the mean from each score,
equals the deviation
```

```
(NUMBERS - MEAN NUMBERS) * 2
```

```
⌈ square the deviations from the mean
+ / (NUMBERS - MEAN NUMBERS) * 2
```

```
⌈ sum the squared deviations
```

```
(+ / (NUMBERS - MEAN NUMBERS) * 2) +
pNUMBERS
```

```
⌈ divide by N, equals the variance
```

```
SD ← ( (+ / (NUMBERS - MEAN NUMBERS) * 2)
+ p NUMBERS) * .5
```

```
⌈ extract the square root, equals the
standard deviation.
```

So, in order to write a general program called SD that takes an argument and returns the standard deviation, all that is necessary is to enter:

```
▽ R ← SD X
[1] R ← ((+ / (X - MEAN X) * 2) + pX) * .5 ▽
```

Don't let this line of APL intimidate you. All we did was substitute the local variable X as a right argument in order to make a more generalized function. It is the same APL statement as above that used the full variable name NUMBERS. Now, to use SD with our 1,000 random numbers:

```
SD NUMBERS
28.74277424
```

It takes about a second to draw the 1,000 random numbers and to specify them into the NUMBERS storage place and about three seconds to compute the standard deviation of the 1000 numbers using the function, SD.

Before we go any further, we need to talk a little about how one gets APL up and running and what the screen looks like when one "enters a statement into APL."

First, it's time you were told what a workspace is. Each APL session takes place within a defined area called a workspace, abbreviated WS. APL is a little bit of a hog when it opens the first WS, taking as much space as possible. (If you open APL from the Command Line Interface (CLI) you can specify the WS size, the manual says. I could never get it to work in version 6.04C.)

A new version of APL is due out any time now, though. Hopefully, by the time you read this article a new version will have been released. It is easy to take away some of the memory APL grabbed by using the special drop-down menu and selecting the Change WS Size option. This clears the active WS so you can only use it before doing any work.

In the current version, however, changing the WS size in this manner does not release the memory for other use very

well and maybe not even for use by itself. It remains to be seen if this annoyance is fixed in the next version. These items are minor in nature and really do not cause any difficulties.

APL runs on any Amiga configuration, provided it has 512K of memory. The APL interpreter and everything you need is on one floppy disk. In order to start APL out of the box, one needs to bring up the Workbench and then put the APL disk in any drive. When the disk icon appears, the usual double-click brings up a window that contains the APL interpreter icon and icons for the workspaces that contain functions which access the extras on the Amiga. At this time, one can ignore the other icons and double click on the one labeled APL.68000. The APL system opens a window that shows the APL System copyright date, the WS (workspace) size, the version, that it is a clear WS, and the cursor appears indented seven spaces (refer to the window in the upper right of the screen picture). At that time APL is ready to have you type in any of the statements that have been mentioned in these articles. It is really that simple.

You might confirm the name (ID) of the current active WS by entering:

```
)WSID
CLEAR WS
```

Its name was CLEAR WS and was empty. You can name the workspace any name you wish by giving an argument to the system command WSID:

```
)WSID HANK1
WAS CLEAR WS
)WSID
HANK1
```

Another system command will tuck our WS away using the name we assigned.

```
)SAVE
21.22.31 11/18/89 HANK1
```

It was saved on the APL disk because we did not set up any other place for it to go. OK for now, but there are more elegant ways to store workspaces on other floppies

or on your hard disk. All user-defined functions and variables are stored in the WS. None of the APL functions are in your stored WS, being common to all workspaces. Let's complete the cycle.

```
) OFF
```

is the system command that signs you off the APL system. This completes the session, releases memory and returns control to the Workbench. When you sign back on the system, by clicking on the APL icon, a clear WS will be provided. The system command:

```
) LOAD HANK1  
SAVED 21.22.31 11/18/89
```

completes the cycle and at this point you are on your own with whatever was in the WS when you saved it. Just ask:

```
) FNS  
MEAN SD
```

You can do everything talked about in these articles. No, you don't know all there is to know about how APL works, yet. You can, even at this stage of your APL knowledge, do a lot with what you know.

The manual provided with your copy of the APL system comes in two parts, the big one with:

```
+ / 6 50 57 166  
279
```

pages in it. It has four sections.

The smaller book has 63 pages and gives all the modifications made to accommodate the extras available on the Amiga that most other folks do not have. The larger book is the same APL68000 reference supplied to all users who also have a computer that uses the Motorola 68000.

When a variable is specified, some of the WS is "used up" (reserved) until the variable is respecified or is erased. All the space in the WS is dynamically allocated so that although the WS size is fixed, the amount of space actually in use varies depending upon what has been specified or written as user defined functions. APL may make temporary copies of variables and uses space from the WS for

intermediate results in performing the operations requested. Suppose you enter the following:

```
DATA ← 1000000 p 1000  
WS FULL  
DATA ← 1000000 p 1000  
^
```

You will find that the WS cannot hold one million 1000's in the size of the WS that is available. Back in the early days, lots of APL was run in 32K workspaces. The WS FULL message was common, too. Now it is usual to work in workspaces containing millions of bytes. Most problems can be run in the size workspace assigned and APL will open another WS and allow multitasking with other smaller size WS, too.

There is a large number of systems commands that tell the APL system things that you want it to do. For example, by entering:

```
) CLEAR  
CLEAR WS
```

We just wiped out all of the work in the active WS.

```
) SAVE  
NOT SAVED, THIS WS IS CLEAR WS
```

greet you. Well, how does one fix that? Very simple, just give a name to the WS and, well...

```
) SAVE JENNY  
22.23.15 11/12/89
```

and we now have saved the WS with the identifier "Jenny". In order to get it back another day we enter:

```
) LOAD JENNY  
SAVED 22.23.15 11/12/89
```

and it tells us when the WS was saved. The following allows sharing of user-defined functions, another system function.

```
) COPY HANK1 MEAN  
SAVED 21.22.31 11/18/89  
) FNS  
MEAN
```

The above series of operations will allow us to write user-defined functions and to copy them from other workspaces as we wish. The last request,)FNS, asked for a listing of the functions in the current active WS. It shows that we reached over to our WS named "JENNY". No, there is no way to add to the primitive function set. Let's save our WS.

```
) SAVE  
22.52.28. 11/12/89 JENNY
```

Note that it now knows what its name is and whereas the save operation would not work for a clear WS it knows that it is OK since it has a name. APL is very helpful in remembering things such as this. All you have to remember is to save your work after making changes or adding variables or user defined functions that are to be saved.

By typing and entering:

```
) OFF
```

you have killed everything in the active WS and are returned to the Workbench. Of course, your saved WS is safely tucked away on the disk and is available for use next time you)LOAD it; it will be just as it was when saved the last time.

•AC•

APL Interpreter for the AMIGA

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ABOUT THE AUTHOR:

Dr. Henry T. Lippert is an educator. He has specialized in the application of computers in education and training and to the tasks of the instructor and the instructional designer.

The Fred Fish Collection

Due to the increasing size of the Fred Fish Collection, only the latest disks are represented here. For a complete list of all AC, AMICUS, and Fred Fish Disks, cataloged and cross-referenced for your convenience, please consult the current AC's Guide To The Commodore Amiga available at your local Amazing Dealer.

Fred Fish Disk 320

AmigaTrekA continuation of Mike's Amiga Trek stories, which are parodies of the Star Trek series, with an Amiga flavor. Earlier stories are on disk 278. Author: Mike Smithwick

AmiOmega

Amiga port of the Omega game. Omega is similar to hack or rogue, but is much more complex. There is a city, several towns, a wilderness, lots of dungeons, a multitude of monsters, lots of spells, magic items, etc. There are several quests to complete. All in all, it is an excellent game. Requires 1Mb or more of memory. Amiga version 1.0, binary only. Author: Laurence Brothers, Amiga port by Rick Golembiewski

Fred Fish Disk 321

DezhExBin An intuition based programmers tool to convert integers between decimal, hexadecimal, and binary. Very small. Version 1.1, includes source in assembly code. Author: Michael Davidian

IconJ

IconJ significantly enhances the IconX program, and is 100% compatible. It allows scripts to be executed by double-clicking the script's icon. Abilities include joining the script with the icon file itself, or calling it from any directory or disk, executing either AmigaDOS or AReXX scripts, outputting to any file or device, running interactive scripts and scripts that contain conditionals, and creating relative console windows. Includes a utility called Atail which attaches or detaches a script to/from an icon file. Version 1.0, includes source in JForth. By: Rich Franzen

Ils

An Iterated Function System viewer which graphically displays iterated function systems and allows the user to interactively create the affine functions that define such systems. An IFS can represent complex pictures very compactly. Simple IFSs can describe an infinite number of different and interesting fractal displays. Includes a number of displays that the author and others have discovered. Version 1.5, includes source in C. Author: Glen Fuller

Planets

Some routines ported to the Amiga by Bob LeVian, that compute the location of the planets (as viewed from a specific point on the earth) and the phase of the moon, for an arbitrary date and time. Includes source. Author: Keith Brandt VII, Jim Cobb, F. T. Mendenhall, Alan Paeth, Petri Laurila, and Bob LeVian

Turtle

A shared library of "turtle" functions for drawing in a RastPort. Includes source in assembly and C. Author: Thomas Albers

UnixDir

A program which intercepts calls to dos.library to add the UNIX style "and ." syntax for current and parent directories, respectively, to file and path names. I.E., you can refer to files in the current directory as ./foo and files in the parent directory as ../foo, or any combination of the two. Includes source in assembly. Author: Murray Bennett and Mark Cyster

Whereis

Another "find-that-file" utility. Whereis searches on your (hard-)disk for a file(name) and displays the path to that file. Some features are case independent search, wildcards, interactive mode (cd implemented), can display size and date of files, always abortable, can archive filenames for "ZOO" (like inams/recurd), and no recursive procedures. Includes source in C. Version 1.18 (2-15-90). Author: Roland Blass

Fred Fish Disk 322

Gwin This is version 1.0 of GWIN or Graphics Window is an integrated collection of graphics routines callable from C. These routines make it easy to create sophisticated graphics programs in the C environment. One-line calls give you a custom screen (ten types available), menu items, requestors, text, circles, polygons, etc. GWIN is a two-dimensional floating point graphics system with conversion between world and screen coordinates. GWIN includes built-in clipping that may be turned off for speed. Use of color and XOR operations are greatly simplified. Many examples of the use of GWIN are included in an examples directory. Examples include line/bar graph program, geographic mapping program, SPICE 2G.6 graphics post-processor, and others. Extensive documentation is included. Author: Howard C. Anderson

Fred Fish Disk 323

ColorTools Three tools that manipulate the colors of your screen.

CZed

A complete midi package for use with all Casio CZ synthesizers. Contains a full fledged sound editor, a split simulator for CZ-101/1000/230S, a bank loader and a memory dump for CZ-1. This is a formerly commercial package now released as shareware. Binary only. Author: Oliver Wagner

LinkSound

Two examples of functions that you can link with your own code to produce a short musical "beep" or a sound that is similar to striking a drum. Includes source. Author: Dieter Bruns

Show

A very versatile program to display IFF ILBM files. Features realtime unpacking scroll, smart analysis of any IFF file, total control over display modes, simple slideshow processing, pattern matching, and a dozen other options. Only 9K. Version 2.0, binary only. Author: Sebastiano Vigna

Fred Fish Disk 324 A

This Fred Fish Disk is offered as an abridged disk until Fred can create a replacement disk. One program has been removed from this disk due to copyright problems.

ANSIED

Demo version of an ANSI screen file editor. It allows you to easily create and modify a screen of ANSI-style text/graphics on the Amiga. The standard ANSI color set (red, green, yellow, blue, magenta, cyan, white) and text styles (plain, boldface, underlined, italic) are provided, along with some simple editing and drawing functions. This demo version has the save features disabled. This is version 1.3.0, an update to version 1.2.0a on disk 221. Binary only. Author: Greg Epley

DiskFree

An small iconifiable intuition program that shows the amount of free space available on all mounted disk devices, both numerically and graphically. Version 1.0, shareware, binary only. Author: Dieter Kurtz

DPFFT

An enhanced version of DPlot from disk 290. DPlot is a simple display program for experimental data, with the goals of supporting paging through lots of data and providing comfortable scaling and presentation. The enhancements for DPFFT include addition of a Fast Fourier Transform (FFT), display of a customized amplitude and phase spectrum, a prewhitening capability, and a Welch window for spectral smoothing. This is version 2.1, binary only. Author: A. A. Walma

Mailchk

A mail client for Dnet, which will inform you of any new mail and will give the choice of viewing, deleting, or printing a message. Version 2.01, includes source. Author: Stephanie Laroche

Fred Fish Disk 325

Batchman A program that allows the user to execute CLI programs and batch files simply by clicking on a gadget. It can be used as the center of a turnkey system, where the user simply clicks on gadgets to launch applications. Version 1.1, includes source in Module-IL. By: Michal Todorovic

DClock

A "Dumb Clock" utility that displays the date and time in the Workbench screen title bar. Uses only about 2 percent of the CPU time and about 10Kb of memory. Also has an alarm clock feature and audible beep for programs that call DisplayBeep. This is version 1.12, an update to version 1.0 on disk 298, with many enhancements and a few bug fixes. Includes source. Author: Olaf Barthel

DoRevision

This program implements easy creation of source code revision headers (very similar to the log headers to be found at the top of the Amiga "C" include files). Version 1.0, includes source. Author: Olaf Barthel

FAM

A File Access Manager for the Amiga that allows multiple AReXX programs to access a buffered version of a directory in a consistent and serialized manner. It buffers all the names, dates, sizes and so on, for quick access. Version 1.1 with source. By: Darren New

FarPrint

Debugging functions for programs which don't have any links to their environment. FarPrint consists of two major parts: a harbour process open to receive and distribute messages and requests, and a set of C functions to be linked into any program wishing to communicate with the FarPrint main process. This is version 1.5, an update to version 1.3 on disk 281, and adds a shared library as well as linker libraries for both Latte and AtteC. Includes source. Author: Olaf Barthel

KeyMacro

A keyboard macro program, configurable via a text file, that also supports hotkey program execution. You can map up to eight functions to each key, including keys such as cursor keys, the return key, etc. Version 1.0, includes source. Author: Olaf Barthel

LileCycles

Some sort of biohythm type program. No docs included. Version 2.0, binary only. By: Michal Todorovic

MemGuard

MemGuard is a MemWatch-like program which has been rewritten in assembly language for maximum speed and efficiency. Unlike MemWatch MemGuard does not run as Task in a dummy loop but rather as a low-level interrupt routine which is capable of trapping memory thrashing even before exec might know of it and even while task switching is forbidden. In fact the low-memory area is checked each frame. Virtually no processing time is wasted, the interrupt routine does the check in about half a raster scan line's time. This program was contributed by Ralf Thanner, who spent

three weeks programming & debugging it. In this program Ralf uses some very delicate tricks to let his interrupt routine work with intuition alerts.

RexHostLib

This is a shared library package to simplify the AReXX host creation/management procedure. Rexx-message parsing is also included making it possible to control AReXX from programs such as AmigaBASIC (can you imagine AmigaBASIC controlling AmigaTeX?). Includes source. Author: Olaf Barthel

Fred Fish Disk 326

CBDump This is a CLI utility for those who are working with the Amiga's clipboard device. It's sole purpose in life is to dump the current contents of the clipboard to stdout or by redirection to a pipe or a file. Useful for testing and interfacing with programs that do not support the clipboard. Source included. By: Stephen Vermeulen

DispMod

One of the series of ROBBS (Rexx Object Building Block System) modules by Larry Phillips. DispMod is a display module that only understands AReXX messages. It allows, under program control, the display of text and the acceptance of keyboard data. Version 0.11, includes source. Author: Larry Phillips

Itb

This program converts an icon to an IFF picture (brush) file. It handles both single and alternate image (animated) icons. This is version 1.10 which adds a colour palette to the previous version from disk 85. Version 1.10, binary only. Author: Stephen Vermeulen

MicroTerm

A very small, very simple, almost brain-dead terminal program. Primarily useful as an example of how to talk to the console and serial devices. Version 0.1, includes source. Author: Stephen Vermeulen

NeuralNets

Programs for playing with Neural Nets using Hopfield and Hamming algorithms. Binary. By: Uwe Schaefer

PopScreen

A small hack to pop a hidden screen to the front from the CLI. This was written to allow the author to use VLTJ with other programs that also use custom screens. Source included. Author: Stephen Vermeulen

Snap

A tool for clipping text or graphics from the screen, using the clipboard device. Snap finds out character coordinates automatically, handles different fonts, keymaps, accented characters, and more. V1.4, an update to FF274. Includes source. By: Mikael Karlsson

VSnap

This is an enhanced version of Snap 1.3, submitted by Steve Vermeulen, which adds the ability to save clipped graphics as IFF FORM ILBM's to the clipboard, so they can be imported to other programs that understand IFF and the clipboard. Dubbed it VSnap, since the official 1.4 Snap is also included on this disk. Includes source. By: Mikael Karlsson, enhancements by Steve Vermeulen

Fred Fish Disk 327

ARTM (Amiga Real Time Monitor) displays and controls system activity such as tasks, windows, libraries, devices, resources, ports, residents, interrupts, vectors, memory, mounts, assigns, fonts and hardware. Includes both a PAL and an NTSC version. This is version 1.0, an update to version 0.9 on disk 277. Binary only. Author: Dietmar Jansen and F. J. Mertens

MM

An implementation of the game Mastermind. In this game you must try to guess a color combination which the amiga sets by a random generator. There are 6 colors which can be set in any combination. Includes source. Author: Dietmar Jansen

MRBackup

A hard disk backup utility that does a file by file copy to standard AmigaDOS floppy disks. Includes an intuition interface and file compression. This is version 3.4, an update to version 3.3e on disk 279. Binary only. Author: Mark Rinfret

Msh

An Amiga file system handler that handles MSDOS formatted diskettes. You can use files on such disks in almost exactly the same way as you use files on native AmigaDOS disks. This is a full functional, read/write version, that supports 8, 9, or 10 sector disks of 80 tracks, and should also work on 40 track drives and hard disks with 12 or 16 bit FAT of any dimension the FAT allows. Includes source. Author: Olaf Seibert

Softfont

Converts portrait soft fonts for HP LaserJet compatible laser printers to landscape format. Includes source. Author: Thomas Lynch

Fred Fish Disk 328

AnalyCalc A full featured system for numerical analysis and reporting. Includes a spreadsheet, graphics programs, documents and facilities for performing many commonly needed functions. Features include an 18000 by 18000 cell spreadsheet using virtual memory, random access to other saved spreadsheet formulas or values, easy save or merge of partial sheets, up to 400 windows on screen, ability to drive any cell from external macros, built in matrix algebra, random number generation, date arithmetic, and much

Hames

Some miscellaneous programs from Chris Hames. DirWork V1.01 is a fast, small, simple efficient DirUtility. FSDirs V1.3 is a floppy accelerator program. VMK V27 is a small virus detector/killer that knows about 27 different viruses and can detect new ones. Nohlo V1.0 stops programs from producing "info" files. Binaries only. Author: Chris Hames

RoadRoute

A trip planner that takes a list of cities and a list of known routes between cities, and generates the distance and time required to reach your destination. An update to FF 251, with an expanded database of cities and roads for New Mexico, Texas, Oklahoma, Kansas, Nebraska, South Dakota, Louisiana, Arkansas, Missouri, Colorado and Mississippi, added by Fred Mayes and Gary Delzer. Includes source. By: Jim Butterfield, Fred Mayes, Gary Delzer

Fred Fish Disk 329

CPU Two programs, one in C and one in assembler, which check for CPU type. This version can detect 68000, 68010, 68020, and 68881 processors. Includes source. Author: Ethan Dicks, based on WhatCPU by Dave Haynie

DiskSpeed

A disk speed testing program specifically designed to give the most accurate results of the true disk performance of the disk under test. Automatically updates and maintains an ASCII database of disk results for tested disks. This is version 3.1, an update to FF288, with some source code cleanups and stress tests for CPU and DMA. Includes source in C. Author: Michael Sinz

Empire

A complete rewrite, from the ground up, in Draco, of Peter Langston's Empire game. Empire is a multiplayer game of exploration, economics, war, etc, which can last a couple of months. Can be played either on the local keyboard or remotely through a modem. This is version 1.33w, an update to FF118, and includes many changes and enhancements. Binary. By: Chris Gray, David Wright, Peter Langston

FileSystems

Displays AmigaDOS disk devices with information about the head geometry, BuffMemType, and the lower level exec device. Includes source. Author: Ethan Dicks

OnePlane

Removes the highest number biplane from the Workbench screen. Normally used to take Workbench screen from 2 biplanes to 1 biplane. This allows CON: style devices to scroll text faster. Includes source. Author: Ethan Dicks

Fred Fish Disk 330

Mostra A very versatile program to display IFF ILBM files. Features realtime unpacking scroll, smart analysis of any IFF file, total control over display modes, simple slideshow processing, pattern matching, and a dozen other options. Only 14K. This is version 1.0, an update to the Show program on disk 323, and adds SHAM, double buffering, faster decompression, color cycling, TeXDocs, startup files for easy customizing, and complete WorkBench support through ToolTypes and Style Icons. Binary only. By: Sebastiano Vigna

Palette

A tool which allows you to change another program's custom screen colors. This is version 1.1, an update to the version on disk 55. New features include checks for WorkBench startups, checks for HAM, HAM Brit, or more than five biplanes, and more graceful exits. Includes source in assembly. Author: Randy Joett, CJ Fruge, Carolyn Scheppner, Charlie Heath

Vt100

A vt100 emulator for the Amiga, which also supports various file transfer protocols like kermi, xmodem, ymodem, zmodem, etc, has an AReXX port, can use custom external protocol modules, and more. This is version 2.9a, an update to version 2.9 on disk 275. Includes source. Author: Dave Wecker, Tony Sumrall, Frank Arthes, and Chuck Forsberg

XprKermit

An Amiga shared library which provides Kermit file transfer capability to any XPR-compatible communications program. Supports version 2.0 of the XPR Protocol specification. Version 1.5, includes source. Author: Marco Papa, Stephen Walton

Fred Fish Disk 331

CRobots A game based on computer programming. Unlike arcade type games which require human input controlling some object, all strategy in CRobots is condensed into a C language program that you design and write, to control a robot whose mission is to seek out, track, and destroy other robots, running different programs. All robots are equally equipped, and up to four may compete at once. Version 2.2w, an update to FF311. Binary only, source available from author. By: Tom Pondreiter, Amiga version by David Wright

Csh

Version 4.01a of a csh like shell derived from Matt Dillon's shell, version 2.07. This is an update to version 4.00a on disk 309. Changes include mostly bug fixes and corrections. Includes source. Author: Matt Dillon, Steve Drew, Carlo Borro, Cesare Dieri

IIEx	A program to convert IFF pictures to an executable. It can handle NTSC-PAL, interlace and overscan. Version 1.0, binary only. Author: Pieter van Leuven	FileWindow	A completely public domain file requester which may be used in any program, even commercial ones. It uses dynamically allocated memory to hold the file names so the only limitation is the amount of memory available. Includes a filter option to limit display of filenames to only ones with a specific extension. Names are automatically sorted while they are being read and displayed. V1.10, includes source. By: Anders Bjørn	SoftSpan	Soft Span BBS program. Intuitive, command-line based menu system with message bases, up/down loads, file credit system, extensive help system, etc. This is shareware version 1.0, binary only, lattice C source code available from the author. Author: Mark Woltschke	Drip	Drip is an arcade style game with 15 floors (levels). You must move along the pipes of each floor and run them to advance to the next level. Every 3 floors completed will entitle you to a bonus round where extra drops can be won. An extra drop will also be awarded for every 10,000 points. Binary only. Author: Art Skiles	
LhArcA	An initialization and faster version of lharc for the Amiga. Requires ARP library. Version 0.99a, binary only. Author: Haruyasu Yoshizaki, Amiga version by Stefan Boberg	MiniBlast	A shoot'em up game which runs just fine in a multi-tasking environment. At last you can enjoy a satisfying megablast while you are writing a boring essay. Shoot anything that moves, and if it doesn't move, shoot it anyway. V1.00, binary only. By: Anders Bjørn	StockBroker	A program that helps you follow the recent table of exchange from one (or more) share(s). But of course you must tell the Amiga the recent table of exchange every day. Requires AmigaBASIC. Binary only. Author: Michael Hanelt	Fred Fish Disk 348	ColorReq	Describes the update to the color library and has an example program, with source, that demonstrates its use. Author: Dissidents Software
LVR	Link Virus Remover. A program that recursively searches directories for link viruses in executable files. This is version 1.20, binary only. By: Pieter van Leuven	Sys	A game built on the additive game PONGO but with several added features. You have been assigned the demanding task of cleaning viruses from your SYSDOP's hard disk. To kill a virus, you simply kick a disk at it. There are fifty different levels, and on each level, the speed will increase and the viruses will be smarter and start to hunt you. V2.10, binary only. By: Anders Bjørn	Keyboard	Functions to translate RAWKEY Intuition messages into usable keycodes. Translation into Module 2 of C source (by Fabbian G. Duloe, III) on disk 291. Version 1.0. Includes source. Author: Fabbian G. Duloe III, Peter Graham Evans	DisEditor	This is a demo of the dissidents shareware text editor. Version 1.1, binary only. Author: Dissidents Software	
NTSC-PAL	Utilities which allow Amiga by: Pieter van Leuven	Fred Fish Disk 337	CManual	A complete C manual for the Amiga which describes how to open and work with screens, windows, graphics, gadgets, requesters, alerts, menus, IDCMP, sprites, etc. The manual consists of more than 200 pages in 11 chapters, together with more than 70 fully executable examples with source code. When unpacked, the manual and examples nearly fill up three standard Amiga floppies. This is version 1.00 and includes source for all examples. Author: Anders Bjørn	RKMCompanion	A two disk set of material created by Commodore for use with the 1.3 revision of the Amiga ROM Kernel Reference Manual, Libraries and Devices, published by Addison-Wesley. Almost 300 files, including C source code examples and executables, have been packed into two hard archives, one for each disk of the two disk set. These examples are not public domain, but may be used and distributed under the conditions specified in the copyrights. Author: Commodore Business Machines, Inc.	DisSecretary	This program can be used to file information in a "file cabinet" type environment. It is well suited for jobs such as maintaining a disk catalog, or user group membership, etc. Included is a data file of the library catalog, disks 1 to 310. Version "Wanda", binary only. Author: Dissidents Software
PatchLoadSeg	This program patches the loadseg routine to automatically detect link viruses when a program is loaded. Displays an alert when a virus is detected in a program being loaded for execution. Version 1.20, includes source. Author: Pieter van Leuven	Fred Fish Disk 338	C++	This is a copy of the Decus cpp, ported to the Amiga. This cpp is more powerful and complete than either of the built in's in Manx or Lattice C. This is an update to the version on disk 28. It has had some ANSI features added. Includes source. By: Martin Minow, Olaf Seibert	CRobots	A game based on computer programming. Unlike arcade type games which require human input controlling some object, all strategy in CRobots is condensed into a C language program that you design and write, to control a robot whose mission is to seek out, track, and destroy other robots, each running different programs. All robots are equally equipped, and up to four may compete at once. This is version 2.3w, an update to FF331. Binary only, source available from author. Author: Tom Pointer, Amiga version by David Wright	FileIO	Contains updated files for version 1.6 of the dissidents requester library. There is a bug fix to the library as well as a new function. See FF257 for the complete documentation, and examples. By: Dissidents Software
VirusUtils	Two programs to detect viruses on disk and in memory. VirusHunter removes all known viruses in memory. VirusKiller removes all known viruses in memory and after removing the viruses the disks can be checked without the virus copying itself to the disks. Version 3.60, binary only. Author: Pieter van Leuven	Fred Fish Disk 339	SASTools	Various submissions from "Sick Amiga Soft". Includes some virus tools, some screen hacks, some small games, and miscellaneous utilities. Includes source in assembly and Module II. Author: Jorg Sixt	Du	Prints number of disk blocks used in selected files or directories. Modified from original version on disk 48 to make output more readable, and handle "C" ext. Includes source. By: Joe Mueller, enhancements by Gary Duncan	ILBLib	Contains updated files for the dissidents libm library on FF237, with new lib features and a new library. Also included is a much improved (better organized) doc file, and new C examples that show how to use the library for any kind of IFF file. See FF237 for other examples. Author: Dissidents Software
Fred Fish Disk 332	Some cute animated pointers. I have adopted one of them as my permanent replacement for the boring red arrow. Binary only. Author: Bob McKain	Fred Fish Disk 340	SID	A very comprehensive directory utility for the Amiga that supports at least a couple of dozen different commands for operating on files. Version 1.05, binary only. Author: Timm Martin	GetImage	An enhanced version of "gi" from disk 14. It now looks for the GRAB marker, in the brush file, instead of assuming that it is at a specific place, sets up the PlanePick value in the image structure, and deletes any unused bitplanes to save memory and disk space. Includes source. Author: Mike Farren, enhancements by Chuck Brand	InstallLibs	A program to copy files to the LIBS: dir of a boot disk. Can be used to create a handy installation program (hard disks especially) for programs that need disk-based libraries. Includes source. By: Dissidents Software
DevPatch	A program that installs a patch for OpenWindow to check the NewWindow structure. If the title matches a specific string, the height will be forced to 45 pixels. This helps to reduce chip memory usage for programs that open overly large windows and then seldom use them. Includes source. Author: Jorrit Tyberghein, Nico Francois, P. Marivert	Fred Fish Disk 341	PCQ	A freely redistributable, self compiling, Pascal compiler for the Amiga. The only major feature of Pascal that is not implemented is sets. This is version 1.1c, an update to version 1.0 on disk 183. It is much enhanced and about four times faster. Includes the compiler source and example programs. Author: Patrick Quaid	MemFrag	Displays number of memory chunks/sizes to show memory fragmentation. Chunks are displayed as 2"N bytes which is a rough guide but still useful. This is an enhanced version of "Frag" from disk 69. Includes source. By: Mike Meyer, enhancements by Gary Duncan	SAMP	An IFF sampled sound format designed for professional music use. It can be used for 16-bit samples, multiple waveforms, etc. Includes a SAMP reader/writer shared library, interface routines, and programming examples. Also includes a program to convert SVSX to SAMP. Author: Dissidents Software
Helper	A little InputEvent hack, activated via the HELP key. Originally meant to provide a unique method of giving the user help (you don't have to put that help stuff into your own program). Now also contains a color requester and a small notepad. Version 1.01, includes source. Author: Michael Balzer	Fred Fish Disk 342	PIPlot	A complete freely redistributable C environment for the Amiga based on the Szoobon Ltd C compiler, Charlie Gibb's assembler, the Software Distiller's linker, and portions from other sources. Steve has pulled everything together and added some enhancements in the process. Version 1.0, partial source only. By: Steve Hawtin, et al.	Roses	A program that draws sine roses. Implements an algorithm given in the article "A Rose is a Rose ...", by Peter M. Maurer in American Mathematical Monthly, Vol 94, No. 7, 1987, p. 631. A sine rose is a graph of the polar equation $r = \sin(n\theta)$ for various values of n and d. Author: Carmen Arino	TrackLibs	A large variety of icons for many uses, of practically every description. Most are animated. By: Bradley W. Schenck
K1_Editor	An editor for the Kawai K1(m) synthesizer with two auxiliary programs for managing sound dumps. This is version 1.00, shareware, includes source. Author: Michael Balzer	Fred Fish Disk 343	SpeakerSim	Demoversion of SpeakerSim 2.0, a loudspeaker CAD program. Simulates vented (Thiele-Small) and closed box systems. Also simulates 1st, 2nd, and 3rd order high and low pass filters. Binary only. By: Dissidents	Unshar	This program extracts files from Unix shar archives. It scores over similar programs by being small and fast, handling extraction of subdirectories, recognising a wide variety of "sed" and "cat" shar formats, and handling large files spread across several shar files. This is version 1.3, an update to the version on disk 287. Includes C source. Author: Eddy Carroll	MemMometer	A program that opens a narrow window and graphically displays your memory usage like a gauge. Based on WFRags, by Tomas Rokicki. Version 2.10, includes source. Author: Howard Hull
Kryptor	A small, simple and comfortable file encoder/decoder. Version 1.00, includes source. Author: Michael Balzer	Fred Fish Disk 344	P2C	P2C is a tool for translating Pascal programs into C. It handles the following Pascal dialects: HP Pascal, Turbo/UCSD Pascal, DEC VAX Pascal, Oregon Software Pascal, 2 Macintosh Programmer's Workshop Pascal, Sun/Berkeley Pascal. Module 2 syntax is also supported. Most reasonable Pascal programs are converted into fully functional C which will compile and run with no further modifications. V1.13 Includes source. Author: Dave Gillespie, Amiga port by G. R. (Fred) Walter	VEed	A Voice (Tone) Editor for the Yamaha 4 Operator series synthesizers. Binary only, source available from author. Author: Chuck Brand	Stitchery	This shareware program loads in IFF images and creates shared patterns from them for use in counted cross-stitch and other forms of needlework. It requires one megabyte of memory to run, and works best with a good high-resolution printer for printing the patterns. The Stitchery was written by The Director and the Projector is included. Version 1.21. Author: Bradley W. Schenck
RevBut	Another InputEvent hack, giving you a toggling right mouse button. Version 1.0, includes source. Author: Michael Balzer	Fred Fish Disk 345	P2C	P2C is a tool for translating Pascal programs into C. It handles the following Pascal dialects: HP Pascal, Turbo/UCSD Pascal, DEC VAX Pascal, Oregon Software Pascal, 2 Macintosh Programmer's Workshop Pascal, Sun/Berkeley Pascal. Module 2 syntax is also supported. Most reasonable Pascal programs are converted into fully functional C which will compile and run with no further modifications. V1.13 Includes source. Author: Dave Gillespie, Amiga port by G. R. (Fred) Walter	XXZ	Cross converts between Motorola/Intel/Tektronix ASCII-hex files. These files are typically used for down-loading into EPROMs, or for transmission where binary files cause chaos. Handles S1, S2, S3, INTEL (inc. USB records), Tektronix (inc. extended). Source included. Author: Gary Duncan	TrackLibs	Two utilities that deal with disk tracks. TCopy copies one or more tracks from one disk to another, and is useful for copying part of a floppy disk into RAD: during bootup. TFile creates a dummy file which "marks" a specified range of tracks, preventing AmigaDOS from using them and allowing them to be used for raw trackdisk data. Includes C source. Author: Eddy Carroll
Fred Fish Disk 333	A package for making 2D plots conveniently. Tim Mooney wrote the original program, which was then enhanced by Alan Baxter with a nicer user interface, support for the PLT: device, and support for file conversion. Rich Champagne and Jim Miller wrote the PLT: handler which emulates a plotter by accepting HP-GL commands, creating a raster image, then dumping it to any preferences supported graphics printer. This is version XLNB, an update to FF292, and includes many bug fixes, style changes, and enhancements. Includes source. Author: Alan Baxter, Tim Mooney, Rich Champagne, Jim Miller	Fred Fish Disk 346	P2C	P2C is a tool for translating Pascal programs into C. It handles the following Pascal dialects: HP Pascal, Turbo/UCSD Pascal, DEC VAX Pascal, Oregon Software Pascal, 2 Macintosh Programmer's Workshop Pascal, Sun/Berkeley Pascal. Module 2 syntax is also supported. Most reasonable Pascal programs are converted into fully functional C which will compile and run with no further modifications. V1.13 Includes source. Author: Dave Gillespie, Amiga port by G. R. (Fred) Walter	Az	A nice little text editor that is fast, simple to use, and very Amigaized. This is version 1.50, an update to FF 228, with lots of new features, bug fixes, and other improvements. Binary only. By: Jean-Michel Forgeas	Icons	A large variety of icons for many uses, of practically every description. Most are animated. By: Bradley W. Schenck
MultiPlot	An Amiga port of the Fuzzy PixMap image manipulation library. This package allows manipulation and conversion of a variety of color and B&W image formats. Supported formats include Sun rasters, GIF, IFF, PCX, BMP, targa, "taco" files, and FBM files. Also has input converters for raw images, like DigiViz files, and output converters for PostScript and Digi graphics. Besides doing format conversion, some of the other image manipulation operations supported include rectangular extraction, density and contrast changes, rotation, quantization, halftone greyscaling, edge sharpening, and histograms. Version 0.9, binary only. Author: Michael Mauldin; Amiga port by Ken Barry	Fred Fish Disk 347	IE	This is an icon editor which can create and modify icons up to 640x200 pixels in size (also dual render). It can set stack size, position of icon (also free-floating), default tool, 10 tool types and control over opened window. It can also generate the C source code behind the icon for program inclusion. Version 1.00, binary only, source available from author. Author: Peter Kiem	CassEt	Cassette tape label printer. Includes source in GFA Basic. Author: Thorsten Ludwig	MemMometer	A program that opens a narrow window and graphically displays your memory usage like a gauge. Based on WFRags, by Tomas Rokicki. Version 2.10, includes source. Author: Howard Hull
PPIMore	A "replacement" program that reads normal ascii text files as well as files crunched with PowerPacker. The crunched files can result in considerable disk space savings. Version 1.5, binary only. Author: Nico Francois	Fred Fish Disk 348	SKsh	A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. Version 1.4, an update to version 1.3 on disk 309. New features include a "tiny" version, a working case construct, support for resident commands, smaller and faster external commands, and more. Binary only. Author: Steve Koren	FME	Patch to AllocMem() to allow badly designed programs which request fast mem without necessity to be run on 512k machines. Includes source in assembler. Author: Holger Lubitz	Stitchery	This shareware program loads in IFF images and creates shared patterns from them for use in counted cross-stitch and other forms of needlework. It requires one megabyte of memory to run, and works best with a good high-resolution printer for printing the patterns. The Stitchery was written by The Director and the Projector is included. Version 1.21. Author: Bradley W. Schenck
PPShow	A "show" program for normal IFF ILBM files or ILBM files crunched with PowerPacker. The de-crunching is done automatically as the file is read. Version 1.0, binary only. Author: Nico Francois	Fred Fish Disk 349	Softfont	Converts portrait soft fonts for HP LaserJet compatible laser printers to landscape format. This is an update to FF327. Includes source. Author: Thomas Lynch	GoWB	Very small (296 bytes) and effective replacement for the well known "LoadWB" and "EndCLI" command pair. This release fixes a severe bug in the first version which used to guru if run out of a script. Includes source in C. Author: Oliver Wagner	TrackLibs	Two utilities that deal with disk tracks. TCopy copies one or more tracks from one disk to another, and is useful for copying part of a floppy disk into RAD: during bootup. TFile creates a dummy file which "marks" a specified range of tracks, preventing AmigaDOS from using them and allowing them to be used for raw trackdisk data. Includes C source. Author: Eddy Carroll
Whats!	A neat little utility which not only recognizes a wide variety of file types (executables, IFF, icons, zoo files, etc.), but prints interesting information about the structure or contents of the recognized file types. Version 1.2a, binary only. Author: J. Tyberghein	Fred Fish Disk 350	SnakePK	A simple, yet addictive game in which you must get the snake (you) off of the screen. There are, however, some rough spots and some obstacles that may need to be overcome. Excellent example of a game that is as system friendly as possible (with source). By: Michael Sinz	PacketSupport	A link library, for use with Lattice C, providing a few functions to handle DOS packet postage. Includes source. Author: Oliver Wagner	TrackLibs	Two utilities that deal with disk tracks. TCopy copies one or more tracks from one disk to another, and is useful for copying part of a floppy disk into RAD: during bootup. TFile creates a dummy file which "marks" a specified range of tracks, preventing AmigaDOS from using them and allowing them to be used for raw trackdisk data. Includes C source. Author: Eddy Carroll
Fred Fish Disk 335	BoingDemo	Fred Fish Disk 351	PDC	Publicly Distributable C (PDC) is a complete C compilation system including a compiler, assembler, linker, libraries, and numerous utilities, documentation files, libraries, and header files. PDC supports many ANSI features including all ANSI preprocessor directives, function prototyping, structure packing and assignment. In addition it supports Lattice C compatible libcall pragmas, precompiled header files, builtin functions, and stack checking code. V3.33 includes source. By: Lionel Hummel, Paul Petersen, et al.	PatchNTSC	OS fix to allow the growing number of PAL display programs to be run on NTSC machines. Will patch the Intuition OpenScreen() function to assure screens with PAL height to be opened in interface mode. Includes source in assembler. Author: Oliver Wagner	TrackLibs	Two utilities that deal with disk tracks. TCopy copies one or more tracks from one disk to another, and is useful for copying part of a floppy disk into RAD: during bootup. TFile creates a dummy file which "marks" a specified range of tracks, preventing AmigaDOS from using them and allowing them to be used for raw trackdisk data. Includes C source. Author: Eddy Carroll
DTC	A utility providing a simple calendar which can hold and show appointments. It may be useful in managing your time. Its chief goals were to provide day, week and month at a glance for any date between 1/1/0001 and 12/31/9999, defaulting to the current date. It is menu driven and fairly easy to use. Includes source in Fortran. Author: Mitch Wyle, Amiga port by Glenn Everhart	Fred Fish Disk 352	MG	Beta version of mg3, including ARexx support. This is probably the most stable beta for the next year, as many new features are going in after this. Amiga-only release. Sources compressed with lharc to fit on the disk. Update to FF147. Author: Mike Meyer, et al.	TextPrint	Second major release of the Ansi editor. All major bugs have been fixed, and a bunch of new options have been added, e.g. possibility to reload ansi files or CLI modules, 4 color option, optimized keyboard layout, new drawing modes, right mouse button support (like DeluxePaint) and much more. Binary only, shareware. By: Oliver Wagner	TrackLibs	Two utilities that deal with disk tracks. TCopy copies one or more tracks from one disk to another, and is useful for copying part of a floppy disk into RAD: during bootup. TFile creates a dummy file which "marks" a specified range of tracks, preventing AmigaDOS from using them and allowing them to be used for raw trackdisk data. Includes C source. Author: Eddy Carroll
SeeHear	A program to do a spectrogram of a sampled sound file. This is a graph with time on one axis, frequency on the other and the sound intensity at each point determining the pixel color. With source in C, including FFT routine. This is version 1.1. Author: Daniel T. Johnson	Fred Fish Disk 353	Car	A two-dimensional full screen scrolling racing game with realistic four channel stereo sound and overscan, for either NTSC or PAL Amigas. The goal is to guide your car around one of ten selected tracks. Each track has its individual high score list. Version 2.0, binary only. Author: Anders Bjørn	Timetest	Working example to show the time() and gettimeofday() functions of the Lattice C support library. Includes source in C. Author: Oliver Wagner	TrackLibs	Two utilities that deal with disk tracks. TCopy copies one or more tracks from one disk to another, and is useful for copying part of a floppy disk into RAD: during bootup. TFile creates a dummy file which "marks" a specified range of tracks, preventing AmigaDOS from using them and allowing them to be used for raw trackdisk data. Includes C source. Author: Eddy Carroll
Fred Fish Disk 336	Car	Fred Fish Disk 354	Cursor	A 3-pass BASIC Compiler for BASIC programs written in AmigaBASIC, does not yet support all of the BASIC commands but is able to compile itself. This is version 1.0, includes source. Author: Jürgen Förster	WBD	Possibly the smallest utility to set the workbench screen to any depth. Includes source in C. By: Oliver Wagner	CompDisk	A disk compression/decompression package which was written to be fast and easy to use. Includes an Arp and an Intuition interface. Includes source in C. Author: Olaf Barthel
						NorthC	A complete freely redistributable C environment for the Amiga based on the Szoobon Ltd C compiler, Charlie	

Gibb's assembler, the Software Distillery's linker, and portions from other sources. Steve has pulled everything together and added some enhancements in the process. This is version 1.1, an update to version 1.0 on disk 340. Partial source only. Author: Steve Hawin, et al.

Fred Fish Disk 354
FastBlit A small tool to speed up blitter operations by up to 60%. Version 1.0, binary only. Author: Ralf Thanner

KeyMacro A keyboard macro program, configurable via a text file, that also supports hotkey program execution. You can map up to eight functions to each key, including keys such as cursor keys, the return key, etc. Version 1.4, an update to version 1.0 on disk 325, which fixes the bugs in version 1.0. Includes source in 'C'. Author: Olaf Barthel

MandelMountains A program that renders three-dimensional images of blowups of the Mandelbrot set. Includes several example images. This is version 2.0, an update to version 1.1 on disk 295. Shareware, binary only. Author: Mathias Ortmann

MemGuard MemGuard is a MemWatch like program which has been rewritten in assembly language for maximum speed and efficiency. Unlike MemWatch, MemGuard does not run as task in a dummy loop but rather as a low-level interrupt routine which is capable of trapping memory trashing even before exec might know of it and even while task switching is forbidden. Version 1.1a, an update to version 1.0 on disk 325, binary only. Author: Ralf Thanner

MXMLib An example Amiga shared library compiled with Aztec 'C' 5.0. This library contains basic support functions employed by programs such as KeyMacro or PrintHandler. In short: mxm.lib is the standard MXM system support library. Version 34.14, includes source. Author: Olaf Barthel

Fred Fish Disk 355
Berserker A viruskiller which checks for certain conditions indicating possible virus infection. Different from other programs of this kind, Berserker does not rely on checksums only, it will also check the possible virus behind the altered checksum. Therefore even new viruses with old infection methods can be traced and resident tools are not touched. Includes source in assembly language. Author: Ralf Thanner

ImageEditor A simple to use graphics editor which allows you to draw and save images/sprites as assembler or C source code. Includes IFF support, undo, and an iconify function. Another feature is the small memory usage so you can use multitasking even on a 512K machine. Maximum picture size is 166'58 pixels. This is version 2.4 and includes source. Author: Robert Junghans

LoadImage An IFF ILM reader that accepts overscanned pictures, allows you to scroll around in the bitmap if the picture is larger than the current display, works on both PAL and NTSC machines, supports color cycling using interrupt code, and supports printing of image portions. Version 1.11, update to version 1.9 on disk 281, includes source. Author: Olaf Barthel

ReuxHostLib This is a shared library package to simplify the ARexx host creation/management procedure. Reux-message parsing is also included making it possible to control ARexx from programs such as AmigaBASIC (can you imagine AmigaBASIC controlling AmigaTeX?). This is version 34.12 which has been recompiled and made a lot shorter using Aztec 'C' 5.0, an update to version 1.6 on disk 325. Includes source. Author: Olaf Barthel

SoundEditor An ESXV stereo sound file editor written in assembly language for speed and minimum size. Version V.8, binary only. Author: Howard Dorch, Mike Coriell, Matt Gerald

TrackSave A Trackdisk patch which removes all known bugs, and one unknown so far, and patches the Trackdisk task to allow various enhancements, such as reading good sectors from partially bad tracks, write verification, write protect simulation, auto motor off, auto update and turning off clicking. Other features are MFM-update and I/O by non-chip buffers. This is version 1.3, an update of version 1.0 on disk 312. Includes source in C and assembler. Author: Dirk Reising

Tron Another game about the lightcycle race sequence in the science fiction computer film "Tron". One or two players and other options. Written in GFA-BASIC and then compiled. Version 1.1, binary only. Author: Dirk Hasse

Fred Fish Disk 356
AlgoRhythms An algorithmic composition program that improvises music over a MIDI interface connected to the serial port. A MIDI interface and synthesizer are needed. The music does not have a strong pulse, and does not repeat motifs or melodies, but can be very pretty. Version 1.0 with source in C, and sample data files. Author: Thomas E. Janzen

NComm A communications program based on Comm version 1.34, by DJ James, with lots of very nice enhancements. Also includes several auxiliary programs such as AddCall, CallInfo, GenList, PCConvert, and ReadMail. This is version 1.9, an update to version 1.8 on disk 230. Binary only. Author: DJ James, Daniel Bloch, Torkel Lodberg, et al.

Fred Fish Disk 357
Empire Empire is a multiplayer game of exploration, economics, war, etc. which can last a couple of months. Can be played either on the local keyboard or remotely through a modem. This is version 2.1w, an update to version 1.33w on disk 329. Changes include a client-server system, a chat/CB mode, realtime private player to player messages, and other enhancements. Binary only. Author: Chris Gray, David Wright, Peter Langston

Fred Fish Disk 358
Blob Another screen hack. Makes red drops of slime flow down your screen. Version 1.1, includes source in C. Author: Guido Wegener

OPSSc OPSSc is a compiler for the expert system language OPS5. The compiler takes OPS5 source code as input and creates a C source code file to be compiled to

create an executable. Arbitrary C code may be linked with the executable and executed as a result of firing rules. The system's strong point is its speed and as a result it sometimes has large executables and large memory requirements. At least 1 Meg. of memory is suggested. Binaries only for compiler and run-time library. Version 1.08a. Requires a C compiler. Authors: Bernie J. Lofaso, Jr., Dan Miranker and Arun Chandra.

Pipeline A game like the commercial game "Pipe dream" (Pipe mania). Needs a joystick and PAL display. High scores are saved to disk. Version 1.0, includes source. Author: Andre Wichmann

ReDate Scans a disk and dates each directory according to the most recent item contained within (not including .info files). Ideal for use after a COPY ALL CLONE, where the directories are CREATED rather than copied and thus lose their date information. Includes source in assembler. Author: Jim Butterfield

RoadRoute Revision of trip planner program to find "best road route" between any two points of travel. The user is encouraged to customize files CITIES and ROADS to suit travel interests. This is version 1.5, an update to the original version on disk 251, and makes provision for very large city menus and itineraries. You might like to use files from disk 328 (Mayes/Delzer). Also includes RoadScan, a checker for RoadRoute files (CITIES and ROADS). Very large files may contain goofs (cities with no roads, the same road entered twice, etc.), or oddities (direct road not as fast as multi-point). These are pointed out, together with areas where users might wish to make economies in the data base. Includes source in C. Author: Jim Butterfield

ScanIFF Scans through an IFF file, identifying the elements. Faster than standard utility IFFCheck since it uses Seek, but does not do IFFCheck's detailed format checking. Intended for use as a "template" from which programmers can code their specific application. For example, an expanded version has been used to extract instrument data from music files. Includes source in assembler. Author: Jim Butterfield

ViewDir A LIST type of utility showing contents of a disk or directory. For directories, shows SIZE. For files, takes a quick look and identifies TYPE if possible. Update to original version on disk 251. Now works with SPAT for pattern matching, and has a small style change. Includes source in assembler. Author: Jim Butterfield

Fred Fish Disk 359
ABridge An interim solution to Anim-5 incompatibility problems. Identifies the origin of an Anim-5 file and modifies it to facilitate easy exchange between Animate, Videopace, Animation Station, DPaint III, Animation: Editor (v1.11), The Director, SA4D, Movie2.0, Photon Paint 2.0 and Cel Animator. Fully intuitionalized interface, full ARexx support including a "Find ARexx" option if you start ARexx after running ABridge. This is version 1.0, shareware, binary only. Author: Ron Tarrant, Mythra-mations Animation and Software

DICE Dillon's Integrated C Environment. A C frontend, pre-processor, C compiler, assembler, linker, and support libraries. Also includes the editor, dme. Features include ANSI compatibility, many code optimizations, and autoint routines (user routines called during startup before main is called). This is version 2.02, shareware, binary only. Author: Matthew Dillon

TextPlus A word processor for the Amiga, with both German and English versions. TextPlus enables you to write letters, books, programs etc. in a very easy and comfortable way. Version 2.0, binary only. Author: Martin Steplinger

Fred Fish Disk 360
UUCP An implementation of uucp for the Amiga, including mail and news. This is Matt's version for the Amiga, based on William Loftus's Amiga UUCP 0.40 release with news code from his 0.60 release, and months of work by Matt to make fixes and add enhancements. This is version 1.06D, an update to FF313. Includes source. Author: Various, major enhancements by Matt Dillon

To Be Continued.....

In Conclusion

To the best of our knowledge, the materials in this library are freely distributable. This means they were either publicly posted and placed in the public domain by their authors, or they have restrictions published in their files to which we have adhered. If you become aware of any violation of the authors' wishes, please contact us by mail.

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And furthermore...

IN RESPONSE TO INFORMATION presented recently in the pages of *Amazing Computing*, the following reports, clarifications, and/or corrections have been brought to our attention.

CBM'S AMIGAVISION OFFER

IN REPORTING ON THE launch of the Amiga 3000 in the June issue of *Amazing Computing* (V5.6, p. 81), we mentioned a special offer to be made by **Commodore Business Machines, Inc.** in conjunction with the release of *AmigaVision*, Commodore's new authoring system for the Amiga. We stated that, "a special offer would be available to all Amiga owners who purchased their computers within 90 days of the announcement."

Some clarification is in order for this statement, which implies that the offer covers Amiga purchases made prior to the announcement. The actual offer refers to a coupon that dealers provide to anyone who bought an Amiga after the *AmigaVision* announcement date (April 24, 1990), but before the product became available in stores (June 30, 1990). Amiga owners who fall into this category can obtain a free copy of *AmigaVision* by mailing the coupon, along with proof-of-purchase, to Commodore.

For further information, contact *Commodore Business Machines, Inc.*, 1200 Wilson Drive, West Chester, PA 19380, (215) 431-9100. *Inquiry #219*

NEW PSYGNOSIS RELEASES

IN THE JULY ISSUE OF *Amazing Computing*, in our coverage of the Consumer Electronics Show (V5.7, page 47), we did not include mention of the

latest releases from **Psygnosis**. While Psygnosis did not formally exhibit at the show, representatives from the company did receive CES exhibitors and attendees in a hospitality suite, where they announced several new products scheduled for release later this year, the most notable being *Shadow of the Beast II*. The company, which recently set up offices in Brookline, MA, currently has three releases—*Anarchy*, *Matrix Marauders*, and *Infestation*—on the shelves.

Some new programming tricks have enabled Psygnosis to break the speed barrier and produce *Anarchy*, which runs at 50 frames per second, twice as fast as anything else on the market. The scenario for *Anarchy* has the player as the captain of a ship guarding a transport craft that has been shot down. The transporter contains canisters of a life-saving serum needed to combat a plague that is devastating Earth. You must now protect the ship until another transporter can arrive to take the canisters to Earth.

Psygnosis expects players to be physically exhausted trying to finish this one. The game will be released under the Psyclapse label with a retail price of \$39.99. *Inquiry #220*

After two years of development, *Matrix Marauders* has now been released under the Psyclapse label. Allowing for one or two players, it puts you in the driver's seat of a three-dimensional grid circuit called the "Grid Of No Return". The game has you racing through deadly tunnels in a black hole against other drivers, all vying to join the elite Intergalactic "Screaming Skull Race Team". If an opponent gets in your way, blast him! *Matrix Marauders* is priced at \$39.99. *Inquiry #221*

Psygnosis' newest release, *Infestation*, features high-speed, 3-D vector graphics to allow the user totally free movement as he hunts an incubating swarm of deadly alien eggs on a moonbase. *Infestation* features seven levels, 3000 locations and 200 3-D objects, not to mention games within the game for the player to solve. Get out the bug spray and \$39.99. *Inquiry #222*

Psygnosis, 29 Saint Mary's Court, Brookline, MA 02146, (617) 731-8379.

BEWARE

IN THE JUNE ISSUE OF *Amazing Computing* (V5.6, p. 39), in an article entitled "Cherryware" author Julie Petersen made reference to a category of products she termed "Beeware", defining it as vaporware that, "is promoted as a commercial product simply to see if there is enough interest to justify development."

We have been notified of the existence of a company called B-Ware Computer Systems, which has been producing public domain software, shareware, and commercial software for the Commodore-64 and 128 since 1984, and is now about to venture into the Amiga market with a product that is currently in beta testing.

We wish to state at this time that there is no connection whatsoever between the term "Beeware" as referred to in Ms. Petersen's "Cherryware" article and B-Ware Computer Systems.

For more information on B-Ware Computer Systems, contact: *B-Ware Computer Systems*, 6915 Roosevelt Blvd., Philadelphia, PA 19149, (215) 332-8276. *Inquiry #223*

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(AmiEXPO, continued from page 67)

BATTLETECH

It is the year 3050 A.D. and the art of war has changed dramatically for the feeble specimen known as human. Instead of massive armies attacking one another, giant robots called BattleMechs roam the battlefields. Mechs work in lances (teams), or sometimes alone, and each is commanded by a fragile human warrior secured safely within the Mech's cockpit.

This is the stage for one of the more unusual uses for the Commodore Amiga. FASA Corporation, long known for their science fiction role-playing board games, has created a new company, ESP Corporation, to bring their extremely popular BattleTech series excitement to the arcade. However, these pioneers did not settle for a simple coin-driven game. They are placing up to sixteen warriors in specially designed Mech cockpits to explore, fight, and team with each other in a one-hundred-square-mile virtual world. And it is done with Amigas.

Each warrior, using the displays and controls of their cockpit, can see their adversaries, lance members, and terrain. Each cockpit contains over 200 hundred controls, switches, and readouts. Players are overwhelmed by the amount of information that is available, yet every system and readout is important for a successful mission.

To make each adventure as enjoyable as possible, all players receive training before they enter their cockpits. Individuals receive their indoctrination through the use of a video training tape (complete with holograms of the BattleTech cockpit and robot), and live assistants. Everything has been created to make the player feel that they have entered the future and that they really are driving a large formidable, yet destructible, giant armored robot.

While no shortcuts have been taken to provide the player with the sensation that they have entered a new world, the cockpits must perform with exceptional ease and control. The cockpits are populated with five large boards placed in a square steel chassis. Each chassis contains an Amiga 500, an A560 Arcnet board from Commodore, a memory board, a specially designed graphics coprocessor, and a sound coprocessor. The chassis are linked through the Arcnet boards to an IBM clone that performs the network management. Todd Butson, of TTR Development, stated the only reason the IBM clone was used in the final configuration was that the proper network software was unavailable for the Amiga when the project began over two years ago.

The Amiga is responsible for controlling all input, graphics, sound, and communications within the cockpit. It is the Amiga's responsibility to maintain the

Top to bottom: View of the original prototype cockpit and the Amiga graphics on the Main Viewing Screen; the new cockpit design, as a hologram, in the instructional tape; still from the instructional tape; Ross Babcock of ESP Corporation and Todd Butson of TTR Development discuss the layout of the Chicago Battle Center.

condition of its Mech, its position, and other data. The Amiga then routes this information through the host computer that updates all other on-line cockpits. The host computer acts as a Game Master and passes the information on each Mech to the other Mechs while maintaining the rules of the game.

While the main game design and some board design was performed by ESP Corporation, Incredible Technologies was responsible for the completion of the coprocessor boards. I. T. wrote the main programming code routines of the simulation software and created the solid model objects used within the virtual world of the simulators.

TTR Development was instrumental in creating the cockpit display graphics, cockpit controls, and the additional code required by the Amiga for the BattleTech simulated universe. TTR was also involved in the construction of various components used in the cockpit simulators.

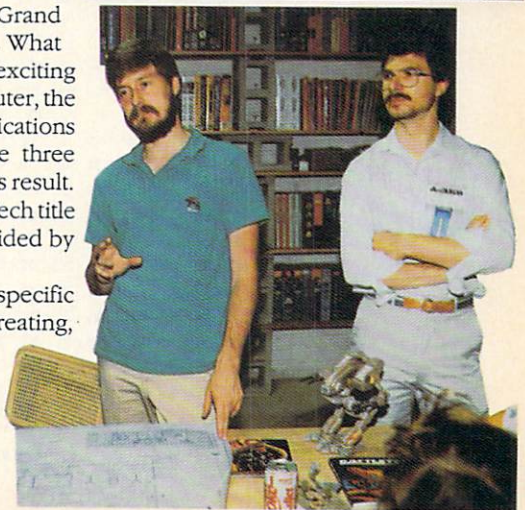
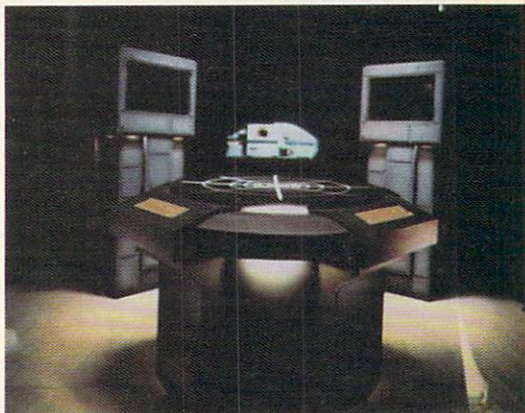
The images displayed on the main screen were rendered in Sculpt 4D. The views in the secondary screen are user-selectable for short and long range views; they are used to display the placement and movement of all of the Mechs in the vicinity.

Each cockpit contains over 200 user options from buttons, switches, and readouts to foot controls and a joystick. The Amiga acts as a controller and monitoring computer for all cockpit activity. It is responsible for monitoring a joystick with fire control (located on the right side), with three buttons, a T-bar-style throttle, and two rudder pedals, as well as the lights, switches, and other assorted controls that a Mech warrior can use to control and customize his Mech to his needs.

BattleTech was introduced at AmiEXPO and the main Battle Center is scheduled for a Grand Opening in the Chicago area on August 14. What makes this application of the Amiga 500 so exciting is the extreme demands placed on the computer, the high graphic output required, the communications network necessary, and the ability of the three companies to work in harmony to create this result. Some Amiga users will recognize the BattleTech title from the licensed game on the Amiga provided by Infocom and Westwood Associates.

With the introduction of these specific BattleTech centers, FASA Corporation is recreating, in a more effective way, the excitement generated by their fictional universe. Meanwhile, the Amiga is demonstrating its singular abilities in a very unique manner.

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